Charles University in Prague

Faculty of Social Sciences

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MASTER'S THESIS

Economic Well-Being Beyond GDP: Implementing the Recommendations of the Commission on the Measure of Economic Performance and Social Progress

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Academic Year: 2015/2016

Subject: IEPS

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Date Submitted: 13th May 2016

DECLARATION:

I hereby declare that this thesis is my own work, based on the sources and literature listed in the appended bibliography. The thesis content as submitted is 122,870 keystrokes long (including spaces), 64 manuscript pages.

Liam James Burton **13/05/2016**

Acknowledgments

The author would like to thank Mario Galeano and Victor Kapustin for their comments on my initial draft. Thanks to Michal Paulus for his help as my advisor. Thanks to Dr. Benacek and Dr. Riegl for their great work on the IEPs program. Peter, diky za překlady a pivo. Merci de m'avoir distrait mais d'une distance sûre.

And as ever, for PAB and SMB.

Abstract

Gross Domestic Product has historically been the dominant, often sole, yardstick regarding a nation's economic development, growth, and well-being. This paper acknowledges GDP's shortcomings and aims development more rounded metrics to better measure well-being. The aim of this thesis is to advance the work done by 2009 Commission on the Measurement of Economic Performance and Social Progress by reassessing the twelve recommendations made by Stiglitz, Sen, and Fitoussi and attempting to apply them to a new dashboard of metrics.

JEL Classification **I31 E01 E21**

Keywords well-being, economic performance, GDP, Stiglitz Commission, quality-of-life, social progress

Abstrakt

Hrubý domácí produkt je historicky dominantní metrika v souvislosti s národním hospodářským rozvojem, růstem a blahobytem. Tato práce potvrzuje nedostatky HDP a jejím cílem je vývoj více vyvážené metriky k lepšímu měření blahobytu. Zaměřuje se na prohloubení práce Stiglitze, Sena a Fitoussiho z roku 2009 (Commission on the Measurement of Economic Performance and Social Progress), přehodnocuje jejich dvanáct doporučení a pokouší se je aplikovat na kolekci možných měření společenského rozvoje.

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Master Thesis Proposal

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Proposed Topic:

Economic Well-Being: Beyond GDP. Implementing the findings of the Stiglitz Commission on the Measure of Economic Performance and Social Progress.

Registered in SIS: Yes Date of registration: 06.06.2015 (in case of No give an expected date)
Remark: the registration must be done by your supervisor but, prior to that, it requires the approval by Dr. Riegl.

Topic Characteristics:
In recent history economics has focused on GDP and GDP growth as the be-all and end-all of economic prosperity. With the global economy creaking towards low levels of growth and much stagnation, it is time to rethink the basis of our economic theory. We must determine whether GDP is an accurate statistical representation of a state's (and its citizens) well-being.
Early in his Presidency Nicholas Sarkozy created an economics commission headed by Joseph Stiglitz, Amartya Sen, and Jean-Paul Fitoussi, tasked with finding a more suitable alternative to measuring economic performance and social progress. Due to other economic (Global Recession) and political (Sarkozy losing power) crises, the commission's findings were not properly implemented. Thus I will apply and advance the findings and suggestion of the Stiglitz Commission.

Working hypotheses:

1. GDP is an inaccurate figure for representing overall economic well-being
2. Policy makers should move away from the ends based process of using GDP growth as a measure of policy success
3. An increase in GDP/capita should not be used as an proof of an increase in social welfare
4. The GDP issues raises bigger questions about measuring, methodology, and quantification in economics
5. Applying the findings and suggestions of the "Stiglitz Commission" would be beneficial for both society and economists

Methodology:
Review existing literature
Empirical research (show that increased GDP growth does not automatically equate to increased "well-being")
Show GDP can be manipulated

Find times when GDP and "well-being" move in opposite directions and why
Use of OECD data and statistics
Apply Stiglitz policy suggestions to data sets

Outline:

What is "well-being"? (standard of living/welfare/etc)

Look at history of GDP

Theoretical problems with GDP

Statistical problems with GDP

Other well-being measurements

What is missing from these existing measurement devices?

New suggestions and critiques (empirical and philosophical)

What did the Stiglitz Commission find?

What are the policy suggestions and implications of the Stiglitz Commission?

Investigate and predict the outcome of these policy implications

Literature:

Coyle, Diane, 2014. *GDP: A brief but affectionate history*. New Jersey: Princeton University Press.

Deaton, Angus, 2008. Income, Health, and Well-Being around the world. *Journal of Economic Perspectives*, 22 (2).

Fox, Justin, 2012. *The Economics of Well-Being*. Cambridge: Harvard University Press.

Easterlin, Richard A.. 2008. *Policy Implications of the Sarkozy Report*, California: USC press.

Frey, Bruno S, and Stutzer, Alois, 2002. *The Economics of Happiness*. New Jersey: Princeton University Press.

Kahneman, Daniel, 2014. *Thinking Fast and Slow*. New York: Farrar, Straus and Giroux.

Landes, David S., 1990. Why are we so rich and they so poor?, *American Economic Review*, 80 (2), pp. 1-13.

Layard, Richard, 2005. Happiness: lessons from a new science, London: Penguin Press.

Jones, Charles, 2002. *Introduction to Economic Growth*. New York: Norton.

Petty, William, 1691. *Political Arithmetick.* London: Clavel.
Philipsen, Dirk, 2015. *The Little Big Number: How GDP came to rule the world and what to do about it*. New Jersey: Princeton University Press.

Piketty, Thomas, 2014. *Capital in the Twenty-First Century.* Cambridge: Harvard University Press.

Screpanti, Ernesto, and Zamagni, Stefano, 2005. Outline of the History of Economic Thought. Oxford, UK: Oxford University Press.

Smith, Adam, 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations.* London: Strahan and Cadell.

Stiglitz, Joseph. "Mismeasuring our lives: why GDP doesn't add up*" Commission on the Measurement of Economic Performance and Social Progress.* 2008.

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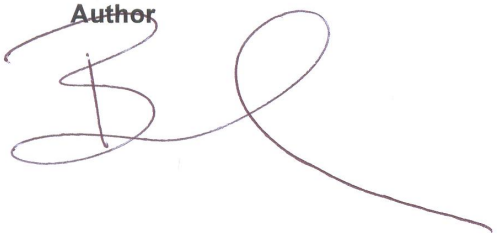

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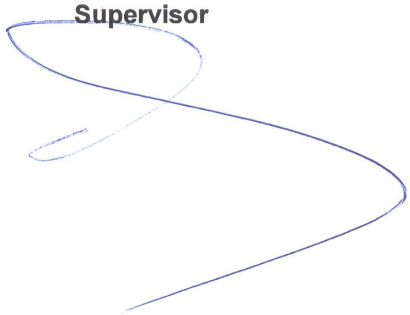

Acronyms

AFC	Actual Final Consumption
ANS	Adjusted Net Savings
CMEPSP	Commission on the Measurement of Economic Performance and Social Progress
EI	Education Index
FHTI	Freedom House Transparency International
GDP	Gross Domestic Product
GNP	Gross National Product
GNI	Gross National Income
HDI	Human Development Index
ICW	Income, Consumption, & Wealth
OECD	Organization of Economic Cooperation and Development
NBER	National Bureau of Economic Research
MEW	Measurement of Economic Welfare
NNDI	Net National Disposable Income
ONS	UK Office of National Statistics
REDD	Reducing Emission from Deforestation and Forest Degradation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHR	World Happiness Report

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Chapter 1

> *"The [financial] crisis is teaching us a very important lesson: those attempting to guide the economy and our societies are like pilots trying to steer a course without a reliable compass"* *Commission on the Measurement of Economic Performance and Social Progress*

Introduction

Gross Domestic Product has historically been the dominant and often sole yardstick regarding a nation's economic development, growth, and well-being. The European Commission (2008) stated that, "GDP has come to be regarded as a proxy indicator for overall societal development and progress in general." However, there is a growing trend in recent years to move acknowledge GDP's shortcomings and development more rounded metrics to better measure well-being and growth. The aim of this thesis is to advance the work done by others in the critique of GDP with regards to its ability to aptly measure a state and its citizen's well-being. In particular, this work will look to the seminal 2009 *Commission on the Measurement of Economic Performance and Social Progress.*

With the global economy creaking around low levels of growth, it is a good time to rethink the basis of our economic theory and see whether these ideas are truly axiomatic. We must determine whether GDP is an accurate statistical representation of a state's, and thus its citizen's, well-being. If it is not, then new metrics and methods must be found so that states can correctly identify if their economic policy is truly benefitting its citizens.

Early in his Presidency Nicholas Sarkozy acknowledged the growing belief that GDP was not an accurate representation of the well-being of a nation's citizens. In order to combat this, he sanctioned an economics commission headed by Joseph Stiglitz, Amartya Sen, and Jean-Paul Fitoussi to look into the issue. The group was formally known as the Commission on the Measurement of Economic Performance and Social Progress (CMEPSP) but is often colloquially referred to as the Stiglitz Commission or Sarkozy

Commission. While the terms may be used interchangeably, generally I will refer to it simply as the Commission.

The Commission was charged with the aim of finding a more suitable alternative to measuring economic performance and social progress. Due to other economic issues, such as a global financial crisis and recession, taking precedent, and political crises, such as President Sarkozy losing power, among other things, the commission's findings were not properly implemented. Thus I will apply and advance the findings and suggestion of the Stiglitz Commission.

The aim of this paper is two-fold. Firstly I will first reassert that GDP is an inaccurate figure for representing overall economic well-being. For this reason policy makers should move away from using it as a measure of policy success. As an increase in GDP/capita should not be used as a proof of an increase in social welfare. I will instead look to find other statistical measures by applying the findings and suggestions of the Stiglitz Commission.

The format of the paper will be as follows. Initially, I will discuss the definition of "well-being". A complex term that is open to many interpretations, the lack of a consistent comprehension of what "well-being" is a topic that many papers could be, and have been, written on. I will look to find a definition of well-being that successfully satisfies a philosophical and ethical definition, whilst simultaneously allowing a level of measurability.

From here I will move to a discussion of Gross Domestic Product. This will cover a basic background and history of the measure, to modern day usage. This will proceed on to a brief explanation of the calculation of GDP. Both the theoretical and statistical problems with GDP will here be discussed. The theoretical issues will deal with what is chosen to be included and what will be discounted, and what things can be manipulated. The statistical refers more to errors in measurement and data collection; the fact that in some instances the percentage error may be higher than any claims of growth or shrinkage of an economy.

This chapter will contain a brief overview and discussion of alternative measurement devices. This discussion will focus on the benefits of the alternative measurement devices, but will be more concerned with why these alternatives are not

used instead of GDP based yardsticks. But finding what is missing from these alternatives, one will be able to make suggestions for what future metrics ought to include. These new suggestions and critiques may be either empirical or philosophical. Perhaps the alternatives, for example, HDI, may have an econometric or mathematical loophole or gap, or perhaps they contain something more intangible that people do not trust or think accurately displays well-being.

The in-depth literature review that follows will create to framework through which to view my contribution. This literature review will start as a wider viewpoint giving a general review of GDP and well-being measurements, before slowly funneling towards the emergence of 'economics of happiness' as a mainstream field of economics. From there, I will move towards the understanding in the early twenty-first century that current usage of GDP did not accurately represent standard of living and well-being within a nation.

This will lead us towards my key document, the Report of the Commission on the Measurement of Economic Performance and Social Progress. The Report was published initially as an academic document in 2009. It was also released in book form, titled: *Mismeasuring our Lives: Why GDP Doesn't Add Up.* The book, released in 2010, is an edited, 'simplified', and more reader friendly version of the report.

A following chapter will discuss the findings of the Stiglitz report, particularly the concluding 12 recommendations. It is these 12 recommendations that will be the mainstay of my investigations. I will be taking these recommendations and apply and predict the outcome of these policy implications. They refer to new ways of measuring, policy advice, and alterations to existing frameworks as well as the introduction of brand new ones.

This will be the key aim of the paper. To successfully apply and implement the findings and recommendations of the Commission on the Measurement of Economic Performance and Social Progress to real world data to see if it offers a more accurate guide for those pilots attempting to guide the global economy. The recommendations of the Commission were incorrectly or incompletely applied and incorporated by

mainstream economics. For this reason, GDP is still overemphasized and defacto used as a well-being indicator. This is problematic as when countries chase GDP growth in a disproportionate amount, at the expense of environmental or social issues, human well-being is negatively affected (Layard, Sachs, and Helliwell, 2015).

Chapter 2

Well-Being

2.1 Definition

Well-being is often defined by listing what it contains or is made up of rather that what it tangibly is. It is understood that things such as education, health, and economic status make up a citizen's *well-being*, but there is not a standardized comprehension or figure to represent it.

Kahneman, et al (2004), found that economists struggle to directly measure well-being accurately due to the individual nature of well-being. Private experiences vary and there is a methodological flaw when making these interpersonal comparisons. Economists will choose to use proxy measures to gauge or interpret well-being instead. These proxy measures can include income on the micro level, or something such as domestic product on the macro level.

In more recent research rethinking the economy from an anthropological viewpoint, Narotsky and Besnier (2014) define well-being as: "the accomplishment of socially reasonable expectations of material and emotional comfort that depend on access to the diverse resources needed to attain them." The authors, in a short phrase, show the complicated link between the market and non-market, subjective and objective, and several other factors such as resource management, when considering what is well-being.

The Stiglitz, et al (2009) note that current well-being involves a combination of clear economic issues such as income, as well as non-economic issues. These non economic issues refer to citizens and "what they do and what they can do, how they feel, and the natural environment they live in". While these issues can be blurry grey areas, the Commission (2009) later notes that "there are several dimensions to well-being but a good place to start is the measurement of material well-being or living standards". From the get go, it is clear that the Commission understands that there is a requirement to consider both market and non-market activities in the comprehension of a citizen's wellbeing.

It appears that a direct measure of well-being is something that is difficult and unlikely to be present. Rather, proxy measures can be used. Thus, through the Stiglitz Commission, it is reasonable that we may find a proxy measure more suitable than GDP at measuring or gauging citizens' well-being.

2.2 Other measuring devices

While Gross Domestic Product is the most commonly used measure of economic activity and a de-facto well-being measure, there are several other existing well-known alternatives. These measures vary in use, success, and legitimacy as an alternative. These devices include, for example, the Human Development Index, the OECD Better Life Index, and the Bhutanese Gross National Happiness index.

The Human Development Index (HDI) is worth noting as it was created by Mahbub ul Haq and Amartya Sen, one of the co-chairs of the the Commission on the Measurement of Economic Performance and Social Progress. HDI is calculated by combining education, health, and GDP/Capita. Thus any problems that arise from using GDP/Capita as a well-being measure will be mirrored when using HDI as a well-being measure.

This remained inclusion of GDP within HDI is similar to the flaws of the European Commission fronted *Beyond GDP* conference in 2007. Despite the hopeful title, mirrored by this author and many others, the European Union was not able to find a suitable alternative. In fact, the EU's published piece led by stating the aim was to "compliment" GDP with other measures rather than phase it out or replace it. If GDP is shown to be a flawed measure of well-being, then it ought to be removed all together.

Chapter 3

Gross Domestic Product

3.1 History of GDP

GDP came to fruition from work done in the pre-WWII era by Nobel Prize winner Simon Kuznets. Kuznets excelled in research of national income and production and is considered the founder of this field (Hamburg obituary, 1987). He worked within a US governmental body called the National Bureau of Economic Research (NBER). The NBER was tasked by Congress with creating nation income and production accounts and Kuznet's headed the research. Initially formed as Gross National Product (GNP), the work was critical in giving government's a measure while trying to jump start creaking post-war economies. However, as we live in a different economy we ought to arm ourselves with different tools

One must also show the calculation of GDP before I proceed to show some of the flaws of the measurements and inputs. While nations use ever more complicated input processes, the simplest form is the expenditure calculation:

$$Y = C + I + G + (X - M)$$

Where the components are GDP (Y), Consumption (C), Investment (I), Government spending (G), Exports (X), and Imports (I). The other formats, though less commonly used, are the *income approach* and the *output approach*. Unless stated otherwise, it is the expenditure approach that any comment about GDP will be referring to. This is the approach adopted by bodies such as the Organisation for Economic Co-Operation and Development (OECD), whose data sets I will be using prominently.

Unfortunately, economic growth has often only been measured by an increase in this GDP figure and this this increase has "been one of the main objectives pursued by most countries throughout history" (Elias, 1992).

Making annual GDP/capita a synonym for economic growth in general is problematic. Gross Domestic Product is a measuring tool to calculate economic growth, it is not economic growth itself. When the advancement of GDP becomes the only objective of a state's economic policy, above all other possible advancements, problems will arise. Furthermore, by stating that annual GDP growth will automatically bring an increase in welfare for all members of a society is one that is shown to be not true by the likes of Easterlin (1974, 2009). This utilitarian suggestion, that as long as the pie is increasing in size, all are better off, is one that is seems to hang around and be difficult to shake, despite Nobel Prize winner criticism (Sen, 1979).

3.2 Theoretical issues with GDP

This paper is not to discredit GDP as a useful and interesting tool. It is just not a suitable tool for measuring well-being. A chainsaw is a useful tool, just not for dentistry work. GDP is an excellent measure of "busy-ness" (Gordon, 2014) – determining whether an economy is active or is it stagnant. An economy that is creating thousands of tones of steel to build thousands of tanks is certainly an active economy, but questions about its usefulness and effect on well-being are impossible to determine from this fact.

As the name suggests, Gross Domestic Product measures what is produced and focuses on output. However, just because something is "put out" it does not mean that people receive it (Gordon, 2014). This means that an economy could be creating plenty of houses, but if there is some problem elsewhere in society, they may stand empty and there may still be homelessness. The link between the market creating something and consumers consuming it is imperfect. GDP obviously contains "consumption" in the equation given previously, but this accounts for all kinds of spending. Not enough of the components of GDP are ones that we could say are definitely linked to well-being.

One noted flaw (Stiglitz, et al, 2009) is the relationship between GDP and the environment. GDP calculations will count environmental damage and catastrophes as positives. This is because these disasters will create added economic activity through repairs and responses.

3.3 Statistical issues with GDP

There are several errors that occur from a statistical viewpoint with GDP. Firstly, as GDP is computed from a very large sample source. Often those calculating GDP have to use estimations or imputations for practical reasons. This increases a measurement error that would otherwise already exist. While celebrating a 0.5% increase in their state's GDP output, a proud Chancellor must acknowledge that there may be an error term of a larger magnitude.

GDP/Capita is a mean average calculation. The problem of a mean average is one that will reoccur repeatedly in this paper. Outliers can heavily affect a mean average. A nation's prosperity can be vastly overstated by the presence of a few billionaires. If one considers two separate ten person nations. In nation A there are 9 poverty stricken unemployed citizens and one multi-billionaire. In nation B there are 10 comfortable middle income citizens. Just judging the mean of the two nations could easily place nation A ahead of nation B where a simple view of the two nations shows that this is probably not the case.

The basic components of GDP, (consumption, imports, and so on) are consistent but the consideration of what goes into each of these subsectors is open to debate. For example, a debate regarding whether should spending ("consumption") on prostitution or drug taking be included in statistics. It could be argued that it should be included because the money is truly spent in these areas. For reasons of morality and law breaking, one could understand why they would be left out.

While grey areas about what to formally include in GDP measures are one thing, outright fraud is another. Coyle (2009) notes the case of Greek GDP compilation. After years of politicians inputting their own figures into GDP releases, outside influence finally forced change. Bowing to external pressure in exchange for debt relief, a new Greek technocrat, Andreas Georgiou, was given the chief statistical role for computing GDP. He found one small dusty office with no computers. After a few months in the job and attempts to correctly compute an accurate GDP figure, the Georgiou was charged with the crime of treason for betraying national interest, as he was not creating figures that the Greek government viewed favourably.

On a similar note, *The Economist*, compiled several figures from recent years to show the huge scale of GDP revisions. The article (The Economist, 2016), cites an average of a few percentage points for most OECD countries, such as the UK by approximately 0.2% and Germany 0.3%. These may seem like small errors and adjustments, but British GDP total for 2013 according to the World Bank was $2.678 trillion, so a 0.2% error still equates to a roughly $5billion difference. If this isn't an eye opener, the article proceeds to quote the 2014 revision of Kenya's GDP up by 25% and Nigeria's by a remarkable 89%. This ability to abuse or misuse certain statistical measures is well represented by Goodhart's Law.

3.4 Goodhart's Law

Goodhart's Law, similar to both Campbell's Law and the Lucas Critique states that "any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes" (Chrystal and Mizen, 2001). Put more simply: when a measure becomes a 'target' is collapses as a suitable measuring device. GDP is a good measure of economic activity, but once policy makers realise they will be judged on annual GDP growth, then they will aim to only increase GDP in order to be judged as successes. GDP stops being a suitable measure of economic activity, because it has become a target instead.

Chrystal and Mizen (2001) link the law not only to the Lucas Critique – a similar ideal from an earlier paper – but also to the Heisenberg Uncertainty Principle from the world of physics. This principle, think of Schroedinger's cat, is that the act of observation affects the results. The system cannot be objectively observed without influencing or affecting the results. Similarly, a government that uses GDP growth to justify its policy cannot objectively measure GDP.

For example, you may decide to chop down every tree in your state and sell them as toothpicks. It would increase your GDP, but is not actually a benefit to your state. If a person, government, or state, feels that it will only be judged according to one metric, then it only makes sense that they will do everything to improve their score in that metric.

If a sitting government knows that they will be judged on an annual increase in GDP growth, then they will do everything possible to increase this figure.

Chapter 4

Literature Review

The criticism of GDP occurs across many strands of the field of economics. So, having discussed its history in a previous chapter, I will not give it its own area of literature review. Instead I will look at two difference strands of economics and how they assess measurements, discuss GDP, and their offers of alternatives. The first branch of economics that I will look at is the Economics of Happiness. For the second branch I will combine some works from welfare, developmental, and other fields, that group together and offer another way of framing the debate about well-being measurements and data.

4.1 Economics of Happiness

One of the founding academics in the field of the Economics of Happiness is Bruno Frey. Now a firmly entrenched field within economics, it is important to discuss the economics of happiness when it comes to well-being measurements. Frey's most notable work is his 2002 book with Alois Stutzer entitled *Happiness and Economics* (2002).

Based on an earlier paper by Frey, *The Economics of Happiness* (2002), the book attempts to quantify happiness and investigate and rank nations by this metric. Split into three sections the book covers an overview of welfare and well-being measurements, a review of the economic determinants that have already been thoroughly discussed, then finally a section on political economy in which the authors' work comes through most clearly.

Throughout their work Frey and Stutzer rely heavily on the use of "self reported subjective well-being". This is as it sounds: polls and interviews where people rank their happiness, often on a 1-10 scale. Much of their research then looks at how inputs such as unemployment, inflation, and other common economic data affect these subjective well-being reports. While across a time-series my personal happiness may decrease as, for arguments sake, inflation increases, this gives good data for an individual, drawing comparative conclusions is more difficult, as there is no "base-level" for a self-reporting score. This perceived lack of empiricism is what I believe harms the authors' work.

Frey and Stutzer (2002) find that in rich countries, an increase in GDP per capita has no increase on happiness. It would appear from their work that the movement of a nation from underdeveloped to developed has a linear link to an increase in happiness but that once the said nation has reached a certain level of comfortable affluence, it is something else that offers additional increases in happiness.

The authors bring up an interesting point when quoting Hungarian-American economist Tibor Scitovsky in stating that most pleasures in life "cannot be bought in markets, are not priced, and are not for sale" (Frey and Stutzer, 2002). This is an important point in drawing away the notion that a "cash" increase in GDP/capita is directly linked to happiness in a more philosophical sense. It also shows the issue with the problem of quantification within economics and economic measurements. There are intangibles, such as freedom, honour, love, that can be agreed on as being positive and increasing happiness, but are also things which cannot be properly quantified and certainly cannot have a truly accurate price attached. This is the problem that often arises in the discussion of the economics of happiness: quantifying the qualitative.

In another 2002 paper, titled *What Can Economists Learn from Happiness Research?*, Frey and Stutzer now discuss the reasons they believe main stream economics should pay attention to the findings of their field. From their studies they have found that, "substantial well-being benefits from factors such as improved accountability, effectiveness and stability of government, the rule of law, and control of corruption" (Frey and Stutzer, 2002). Frey and Stutzer believe that economists must better understand all elements that go into subjective well-being as it could help explain many paradoxes and apparent contradictions that appear in economics.

One example given in the paper is that between 1946 and 1991 there was an increase in GDP/capita of around 250% in the USA. However, in this same time frame self-reporting happiness didn't fluctuate (Frey, 2002). Here I quote the Frey and Stutzer paper directly, but in their footnotes they acknowledge the huge amount of research backing up this claim, from other esteemed economists such as Easterlin, Blanchflower, and others.

One of these cited authors, Richard Easterlin, is a huge figure in this area of work. His writings have influenced both this paper and the Stiglitz Commission itself. I will briefly go over several of his papers and then comment on his chief contribution to the field of economics, the 'Easterlin paradox'.

Easterlin's seminal work is perhaps the paper titled *Does economic growth improve the human lot? Some empirical evidence*. Written in 1974, Easterlin challenged the perceived axiom that an increase in economic growth equated to an increase in human well-being. The overall findings of the Easterlin's research (1974) was that, "since 1946, higher income was *not* systematically accompanied by greater happiness"[1]. He concludes that developed nations, such as the United States, have reached a point of satiation regarding happiness and well-being that can be increased no further by classical economic growth. Easterlin's concluding remark from his research (1974) is that "economic growth does not raise society to some ultimate state of plenty." This is referred to as the Easterlin paradox as it seems to go against what one would expect to happen after reading the teachings of mainstream economics.

Later research (Easterlin and Angelscu, 2009) reconfirms Easterlin's initial paradox. Using large time series evidence across thirty-seven states, a mixture of developed, developing, and transitional, the authors found no significant relationship between long-term GDP growth and an improvement in citizen's happiness.

The final piece of literature that I will comment on in this section is the paper titled *Would You Be Happier If You Were Richer? A Focusing Illusion*. This paper was worked on by Daniel Kahneman, Alan Krueger, as well as D. Schkade, N. Schwarz, and AA Stone. Their findings fail to find a strong correlation between increased income and increased happiness (Kahneman et al, 2006). While this confirms earlier work done by Easterlin, they raise bigger questions about the ability to gauge true levels of happiness and well-being through questionnaires. Usually asked to state their happiness on a 0-10 scale, respondents "do not know how happy or satisfied they are with their life in the way they know their height or telephone number" (Kahneman et al, 2006). Furthermore, there is an issue about the construction of the question that is similar to the Heisenberg

[1] My emphasis

Uncertainty Principle interpretation in physics:[2] "the answers to global life satisfaction questions are constructed only when asked" (Kahneman et al, 2006). This phenomenon is known as response bias. People do not really know their level of happiness, and only when asked to consider this figure on a questionnaire do they think of their happiness. For this reason, an independent random event directly previous to their response in the questionnaire (either positive or negative) could overly affect the response they give.

Would You Be Happier also discusses the fact that income does not appear to increase happiness, instead people "over predict the increase in happiness" that will occur if they gain an increase in income (Kahneman et al, 2006). People anticipate that a pay raise will increase their happiness by a larger proportion than it actually does. There will then be a "misallocation of time, from accepting lengthy commutes (…the worst moments of the day) to sacrificing time spent socializing (…the best moments of the day)" (Kahneman et al, 2006). So rather than increasing their happiness via an increased income, respondents were worse off due to the reduced time they could spend on leisure and pleasure.

4.2 Welfare and development economics

Angus Deaton is a Scottish economist who was awarded the 2015 Nobel Prize in Economics "for his analysis of consumption, poverty, and welfare" (Nobel). Currently a Professor of Economic and International Affairs at Princeton University, I though it apt to cover some of Deaton's work, due to its current prize winning nature and its link to the field.

His 2008 paper, *Income, Health and Well-Being around the World: Evidence from the Gallup World Poll*, was published in the Journal of Economic Perspectives. Using large data sets from respondents of worldwide surveys, Deaton creates various regression models to judge the relationship between life satisfaction and various socioeconomic inputs.

Interestingly, Deaton's use of self reporting surveys is similar to Frey and Stutzer, despite coming from different spheres of economics. The reports Deaton uses are a

[2] Only when something is measured does it gain properties. The act of measurement affects the system. Referenced in 3.4.

combination of the two different ones. The first, the World Values Survey, has data from 1981, 1990-1991, 1995-1996 and 1999-2001. These reports and interviews were carried out across around 80 countries.

The second, more recent, survey that Deaton leans on is the 2006 Gallup World Poll, which sampled people from 132 countries. In each institutions' reporting there was a wide range of respondents across differing ages, races, and, socio-economic backgrounds. The questionnaires themselves covered numerous areas of life satisfaction, health, economics, and well-being.

A key point made by Deaton (2008) in his overview is that ""life satisfaction" and "happiness" are not synonyms". Life satisfaction in the questionnaires refers to an "overall evaluation" of one's life. Happiness is a short term feeling that could influence your life satisfaction.

The areas that Deaton (2008) specifically investigates are the relationships between:

- Per Capita Income and Life Satisfaction
- Growth of Income, Life Expectancy, and Life Satisfaction
- Life Satisfaction, Age, and GDP
- An additional section looks at Health Satisfaction and Health Systems

In his conclusion, Deaton (2008) states that he sees a positive correlation between increased income and increased life satisfaction. However, he explains that this is because of the relative nature of respondent's self-assessment. By this, Deaton explains that, when asked to scale themselves on a 0-10 scale of the worst-possible to best-possible life, a respondent understands, "how bad life is Togo and other poor places, and the Togolese, understand how good life is in …high-income countries." This means that people are placing themselves on a pre-conceived scale, rather than an honest inward assessment. While making these findings, Deaton (2008) does not go all in behind them: "neither life satisfaction nor health satisfaction can be taken as reliable indicators of population well-being."

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Part of the *United Nations Educational, Scientific and Cultural Organization*, (UNESCO) the Mahatma Gandhi Institute of Education for Peace and Sustainable Development focuses on peaceful and globalized sustainable development. In the first 2015 edition of their biannual publication, *The Blue Dot*, Professor Sir Partha Dasgupta, Professor Emeritus of Economics at the University of Cambridge, penned a powerful op-ed piece titled *Wealth, Well-Being, and the Sustainable Development Goals.*

Sir Dasgupta discusses economic theory regarding Gross Domestic Product and some of its flaws. He offers his preferred theoretical alternative then cites the statistics offered by recent reports by the Indian statistical office to back his ideas up. His viewpoint comes through the sphere of sustainability.

First covering some basic presuppositions about GDP; definition, likelihood of increasing employment and investment; Dasgupta (2015) then points out a recurring theme in economics, "GDP has assumed such an important place in the macroeconomic lexicon, that is someone says "economic growth", we immediately know they are referring to growth in GDP". This is in my view an undoubtedly problematic issue. When the word 'growth' is used as a synonym for 'GDP growth' then everything that causes GDP growth is seen as automatically positive, as the word 'growth' is etymologically linked to progress. However, there may be practices that increase GDP growth but have negative consequences (pollution, arms sales, etc). However, if one were to argue against policies or practices that advocate for such actions, you could be criticized for blocking or attempting to deter 'growth' or 'progress'. A key issue is to separate the phrasing "GDP growth" from vaguer terms such as "economic growth".

Continuing with the misrepresentation of GDP, Daguspta (2015) confirms that economists and statisticians "who devised the notion of GDP were not seeking to find a measure that would reflect the well-being of people" rather that measuring "economic activity became necessity during the Great Depression" in order to solve the problems of large scale unemployment and dormant factories and industries. How it came to become the sole "yardstick by which economic progress was judged. I have no idea," writes Dasgupta (2015).

His solution to the problem is to focus on household wealth rather than income. If a household lives within its means, they will acquire wealth, which is a more beneficial to the household and which is a more beneficial measure of well-being:

> *"Human betterment on a sustainable basis can be assured if, and only if, a country is able to accumulate wealth… a nation's wealth is the social worth of its assets… economic growth should mean growth in wealth, not growth in GDP."* (Dasgupta, 2015)

To do so Dasgupta challenges that state's statistical office should keep balance sheets of their citizens' "wealth accounts". Beyond pointing out the importance of wealth over income, Dasgupta's second recurrent theme is that of sustainability. However, in this paper, he writes not about the physical environment, but rather the social environment. These intangible ideas and values such as cultural capital, religious capital, and knowledge capital offer great additions to the wealth of our nations yet are not accounted for in any measures of well-being. Dasgupta offers the work of the *Green National Accounts for India: A Framework* and the *Inclusive Wealth Report 2012* as excellent starting points for formal wealth based databases and investigations.

Chapter 5

The Commission

> *"The [financial] crisis is teaching us a very important lesson: those attempting to guide the economy and our societies are like pilots trying to steer a course without a reliable compass" (CMEPSP)*

In February of 2008, dissatisfied with contemporary measures well-being, then French President Nicholas Sarkozy called upon three leading economists to create a commission with the goal of improving the field (Easterlin, 2010). Thus the *Commission on the Measurement of Economic Performance and Social Progress* was tasked with displacing GDP as the chief measure of well-being in order to better aid policy makers with their decision making. While the social sciences have long criticized GDP, economists have remained lovingly embraced to it, and "it is economists that have had the policymaker's ear" (Easterlin, 2010).

The three economists that Sarkozy selected are some of the most prestigious in the world. Professor Joseph E. Stiglitz of Columbia University, former head of the World Bank and Nobel prize winner, acted as the Chair, and the Commission is often (in this paper and in general lexicon) referred to as the Stiglitz Commission. Professor Amartya Sen of Harvard University, acted as the Chair Adviser, and offered his Nobel Prize winning experience from the field of development economics. Professor Jean-Paul Fitoussi of Institut d'études politiques de Paris, acted as the coordinator of the Commission. A full list of the other members of the commission (including names such as Kenneth Arrow, Daniel Kahneman, and Angus Deaton) and rapporteurs is listed within the Commissions report. None of Stiglitz, Sen, or Fitoussi responded when contacted by this author for comments regarding this paper.

Upon concluding their investigation, the Commission published its final report in Setpbember 2009. The Commission (Stiglitz, et al 2009) decided upon twelve recommendations to represent their findings. These twelve recommendations came from

the reports investigations into three general topics. These were classical GDP and economic issues, quality of life, and sustainable development and the environment. The Commission's (2009) recommendations were:

Table 1: The Twelve Recommendations

1.	When evaluating material well-being, look at income and consumption rather than production
2.	Emphasise the household perspective
3.	Consider income and consumption jointly with wealth
4.	Give more prominence to the distribution of income, consumption and wealth
5.	Broaden income measure to non-market activities
6.	Quality of life depends on people's objective conditions and capabilities. Steps should be taken to improve measures of people's health, education, personal activities and environmental conditions. In particular, substantial effort should be devoted to developing and implementing robust, reliable measures of social connections, political voice, and insecurity that can be shown to predict life satisfaction.
7.	Quality-of-life indicators in all the dimensions covered should assess inequalities in a comprehensive way
8.	Surveys should be designed to assess the links between various quality-of-life domains for each person, and this information should be used when designing policies in various fields.
9.	Statistical offices should provide the information needed to aggregate across quality-of-lie dimensions, allowing the construction of different indexes.
10.	Measures of both objective and subjective well-being provide key information about people's quality of life. Statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities in their own survey.
11.	Sustainability assessment requires a well-identified dashboard of indicators. The distinctive feature of the components of this dashboard should be that they are interpretable as variations of some underlying "stocks". A monetary index of sustainability has its place in such a dashboard but, under the current state of the art, it should remain essentially focused on economic aspects of sustainability.
12.	The environmental aspects of sustainability deserve a separate follow-up based on a well-chosen set of physical indicators. In particular there is a need for a clear indicator of our proximity to dangerous levels of environmental damage (such as associated with climate change or the depletion of fishing stocks.)

Source: Stiglitz, et al, 2009

While discussing quality of life the Commission (2009) also explains its belief that well-being is multidimensional and each of these dimensions should be considered simultaneously. These dimensions can be broken down into eight categories:

Table 2: Eight dimensions of well-being

i.	Material living standards (income, consumption and wealth)
ii.	Health
iii.	Education
iv.	Personal activities including work
v.	Political voice and governance
vi.	Social connections and relationships
vii.	Environment
viii.	Insecurity, of an economic as well as physical nature

Source: Stiglitz, et al, 2009

Thus any well-being measure crafted to replace GDP must take into account both the twelve recommendations of the Commission's work and the eight dimensions that make up a citizen's well-being. Hope was high for the Commission, as Easterlin (2010) wrote soon after its publication, "with the Sarkozy report, a sea change is perhaps in the making."

Unfortunately, this was not the case. The global recession took focus elsewhere. Stiglitz focussed on *Freefall: America, Free Markets, and the Sinking of the World Economy* and austerity in the EU. Similarly, Nicholas Sarkozy had to deal with, an unsuccessful, re-election bid, and did not implement the plan to 'remove' GDP. Acknowledging this, the OECD has set up a High Level Expert Group (OECD Press Release, 2013) to continue the work of the Commission. Aiming to work over three years from 2013, the OECD wishes to fill "gaps" in the initial commission's work and change the OECD's own measurement regarding well-being and progress. This author feels that the initial Commission did offer an excellent framework for the improvement of well-being measures and the movement beyond GDP as this paper will show. However, I do welcome the return to the forefront of the Commission's work.

Chapter 6

Methodology

Inspired by the idea of economics being a truly multidisciplinary field of study research was approached with a combined empirical-analytical and interpretative viewpoint. The investigation in this paper will took in both empirical methodology and some interpretive methodology; a combination of both quantitative and qualitative.

The literature review (Kahneman, et al, 2006) has shown some scepticism about the use of self-reporting data and questionnaires. The outside influences that affect the answers that respondents give, such as their perceived place in the world, their mood that day, make the responses too unreliable to be properly trusted and used to 'overthrow' something as ingrained as GDP use. For this reason, I attempted to focus on the use of 'objective' raw data that is supplied by the OECD database. However, the Commission (2009) itself recommends the use of questionnaires, and it helped to draw together the multi-disciplinary approach. Thus, the issue of questionnaires was dealt with simultaneously but side-by-side.

My aim is to apply the recommendations of the Report by the Commission on the Measure of Economic Performance and Social Progress. I will firstly consider each of the twelve recommendations on a logically and theoretical level. Do they accurately explain what GDP misses and how one could more accurately calculate and measure well-being from a theoretical and philosophical standpoint? Those that appear to have the soundest alternative, those that offer a simple and effective alternative measure will receive an empirical investigation.

Through the use of data analysis and some simple correlation coefficients I applied the alternative suggestions and compare them to existing GDP figures to see if there is a more suitable measure of well-being. Research (Easterlin and Angelscu, 2009, Frey and Stutzer, 2002) cited in the literature review has shown that GDP does not guarantee an increase in well-being. Thus any new metric would not be adopted if it shared a perfect correlation with GDP.

Any analysis, regressions or models, came from large scale and publically available data sets. To create my own data sources would be unrealistic from a time perspective and also would be unlikely to be of a higher quality than existing data sets. The data sets that I most commonly used were be from the Organisation for Economic Co-operation and Development. Additional data was taken from the World Bank. Some other data sources are used and cited. The OECD has a limited membership, but the consistency and reliability, strength and depth of the data are second to none of the data, and more than makes up for this. Findings from these OECD data sets can then be expanded to all nations as part of possible future work.

Chapter 7

The Recommendations

7.1

1. *When evaluating material well-being, look at income and consumption rather than production*

Recommendation 7.1 relates to the notion that production alone offers very little insight. Just because a nation is making a lot of something, does not comment on its quality, usefulness, or benefit. Furthermore, the production of an item does not guarantee that any citizen is receiving it on the other end.

Unfortunately, I would suggest that measuring consumption alone would not solve this issue. High levels of consumption do not automatically equate to high standards of well-being if applied logically. In a material sense, a higher quality of automobile would reduce consumption. Consider that previously you may have had a low quality automobile that needed many replacement parts, had to be fully replaced within five years, and used up huge amounts of gasoline during its lifetime. Comparatively, your new higher-tech automobile uses less gasoline, has fewer repairs, and may never have to be replaced in your lifetime. Thus measuring well-being through the consumption of automobiles (and its complimentary goods) could easily have a negative correlation.

It is true that production does not mean that all goods and services are used, therefore one must begin to take into account the wastefulness and sustainability. This consideration of efficiency and the green element are dealt with more in depth in later recommendations that focus on sustainability and the environment.

The Commission makes repeated reference to the fact that there are many existing measures and indicators that are very useful. Rather than searching for a wholly original or new paradigm for measuring well-being, we instead can just emphasize figures that statistical offices already print in national accounts that are alternatives to GDP.

In order to better note the well-being of the nation in question, the study of Gross National Product rather than GDP, could be beneficial. It would make sense that

measuring the amount of money that *remains* within the states borders would better represent well-being of citizens than the amount of money made *within* the states borders. Unfortunately, the problem with GNP is that deprecation of goods, services, and infrastructure is not properly represented without accurate and complicated imputations that do not truly exist at the moment. However, this thought of having a measure that takes into account the flow of capital across borders must be taken into account.

There is commonly large difference between a nations total domestic product and the average income of citizens (Stiglitz, et al, 2009). GDP will contain profits made within the borders of the nation. This money may never reach the citizens within that said country. Instead, the profits may be made by patriots of other nations. Thus the citizens of the initial nation are not benefiting greatly. Less developed nations may have large increases in GDP but only via export, often natural resources, with the profits heading to foreign investors. If the nation wants a better gauge of an improvement in their citizens' well-being, "national income measures are more relevant to this question than GDP" (Stiglitz, et al, 2009).

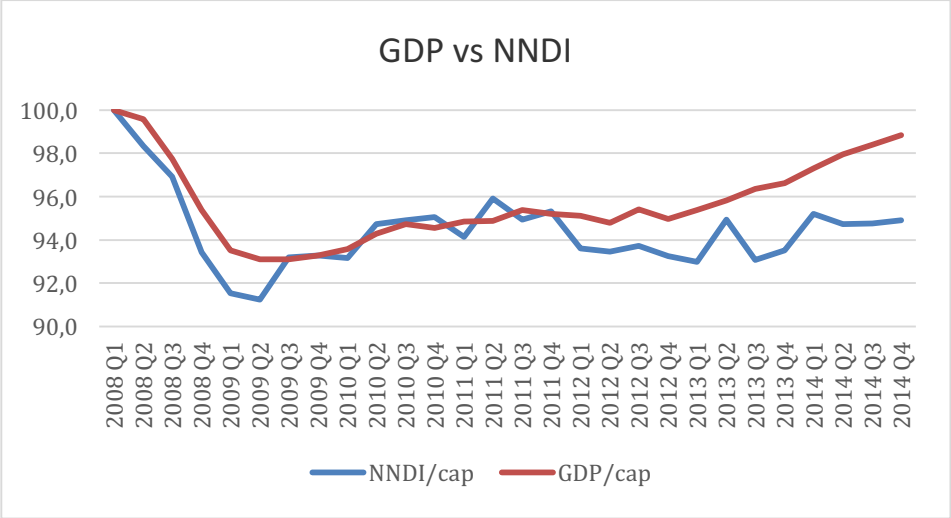
A theoretically simple measure of income would be to use a median Income figure. Unfortunately, large statistical collection bodies such as the OECD only offers mean average annual wages. The problems of mean averages versus median averages is one that is known from early mathematic and statistics classes. Mean averages are simpler to calculate but more significantly affected by outliers. Thus, mean income statistics are heavily distorted by high earners. Median statistics on wages are not readily available for many nations. Nations could in theory collect and create median data via tax receipts. However, some flaws of income alone as a measure of well-being would remain. For example, one nation may have a higher income, but no government services. A second nation may have lower income, but free health and education services. Thus income alone can be a flawed well-being measure due to the difficulty of valuing these government provided services.

Taking into account both the idea of an existing statistic and one that takes into account cross-border flows of money, the Commission refers to Net National Disposable Income. The OECD (2016) defines Net National Disposable Income (NNDI) as:

Net national disposable income may be derived from net national income by adding all current transfers in cash or in kind receivable by resident institutional units from non-resident units and subtracting all current transfers in cash or in kind payable by resident institutional units to non-resident units.

Simplified, NNDI takes into account citizens overall average income when cross-border flows, such as sending money abroad to family, are taken into account. To investigate the relationship between NNDI and GDP/Cap I selected the nation of the United Kingdom. The Office of National Statistics, an independent body backed by the British Government, is one of the most helpful websites for in-depth data relation to various parts of the British Economy. They offer data for NNDI from 1997 until the present day.

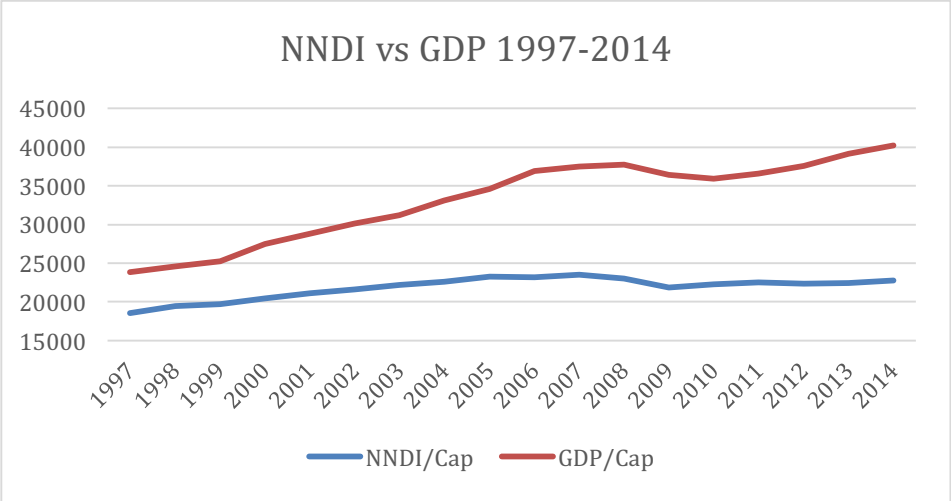
Figure 1: UK – linked GDP vs NNDI



Source: ONS, 2015

Taken from the Office of National Statistics data, the table shows six years of adjusted data for the United Kindgom between 2008 and 2014. Linking both starting points of GDP and NNDI at 100%, the fluctuation between the two can be shown. The economic downturn of 2008 onwards can be seen to affect both clearly, but GDP taking a larger upswing of improvement around 2012, while NNDI remained lower. As an average, NNDI was 1.3% lower across the time frame given. Across the data the Correlation Coefficient was 0.7372.

Figure 2: UK – GDP vs NNDI



Source: ONS, 2015

By compiling some of the same data from the UK's Office of National Statistics (2015) against general GDP data from the OECD (2015), Figure 2 shows the raw gross data across a slightly larger time frame. Here there is, to my slight surprise, a larger Correlation Coefficient of 0.898 but with an average 33% less total.

So income is at a lower level and a lower growth rate that GDP, however "material living standards are more closely associated with measures of real income and consumption" (Stiglitz, et al, 2009) than GDP. By using *Net National Disposable Income* one is able to take into account issues such as "production can expand while income decreases or vice versa when account is taken of depreciation, income flows into and out of a country" (Stiglitz, et al, 2009).

A concern on focusing on consumption rather than production, is that several of the flaws of a production based measure would remain. These are shown in some of the later recommendations that relate to sustainability and environmental concerns. An increasing consumption can be fuelled by consumption of oil, gas, and timber based goods. This matches the criticism that "ecological catastrophes can increase GDP" (p. 73) when focusing on production. Granted, people will not choose to 'consume' an oil-spill,

but they will purchase goods the come from the petro industry, or from felled forests and so on.

A further flaw of the consumption only based approach is the lack of true valuation for the quality of the good beyond its dollar price. By this the author means that one high-quality good, say a television, that is bought and lasts for several years would appear less positive in the metric than someone who buys or 'consumes' four, regularly breaking, televisions per year.

While agreeing with the recommendation to move away from production based measures, one would rank income as more favourable compared to consumption alone. Due the issues of consumption, I would focus on the income part of this first recommendation. While criticisms of GDP as a measure of well-being hold true, many authors (Deaton, OTHERS) have shown that increased income increases well-being up to a point. For this reason, using a metric based on median wage measure, or an average annual wage could be beneficial. Due to differing costs of living, the metric would have to correctly alter the average or median wage into a common unit.

7.2

2. Emphasise the household perspective

A problem with per capita averages is that the overall population of a state does not match up to the problem or construct of the data. By this I mean that if GDP is supposed to represent the possible wellbeing of each member of the population, then we ought to consider the make up of this population.

Ideally, median measures would be beneficial for accurate representations and interpretations of data regarding peoples well being. However, the Commission (2009) notes the difficulty in finding acceptably accurate median figures. Mean averages are simply too easily swayed by outliers, in this subject matter, typically the super wealthy. Thus we must find a suitable mean figure that takes into account or makes up for these flaws.

Let us consider a fictional state to have a GDP/Capita of $30,000. This suggests that every living member of the state in theory has access to $30,000 each. However, we

do not need to look at a population breakdown of a nation to know that this is obviously unrealistic in the real world. Those who are over 65 and those who are under 16 are not likely to be able to 'acquire' $30,000 per annum.

Instead, groups of people live together in households: parents, children, grandparents, siblings. Amongst this group there are those who earn and those who do not. The household as a unit will gain income, wealth, and human capital resources. For this reason, the Commission (2009) recommends using measures that take into account the household perspective rather than the individual one. The reason for this is that household income is more closely linked to wealth. Various income statistics are commonly held by many national statistical bodies and international organizations. Household income statistics try calculates the "true" income of the household by taking into account taxation, social benefits, and the effects of interest. As the Commission (2009) states, household data will include consideration of: "payments between sectors, such as taxes going to government, social benefits coming from government, and interest payments on household loans going to financial corporations," in a way that is missed by other measures.

While noted in *7.1* is the lack of consistent median income data in 2009 Gallup collected some median household data.

Table 3: Median Household Income vs GDP/Capita

Nation	MHI	GDP/cap
Australia	$46 555.00	$41 065.80
Austria	$34 911.00	$40 629.30
Canada	$41 280.00	$38 746.30
Denmark	$44 360.00	$39 612.80
Finland	$34 615.00	$37 534.30
France	$31 112.00	$34 825.50
Germany	$33 333.00	$37 767.40
Japan	$34 822.00	$31 860.60
Korea	$40 861.00	$28 392.80
Luxembourg	$52 493.00	$80 238.90
Netherlands	$38 584.00	$44 398.30
New Zealand	$35 562.00	$30 385.60
Norway	$51 489.00	$56 164.20
Sweden	$50 514.00	$39 657.30
UK	$31 617.00	$36 371.40
USA	$43 585.00	$46 929.90

Sources: Gallup, 2009, OECD, 2013

This data gives a Correlation Coefficient of 0.66 and a MHI/Capita figure that on average is only 66.16% that of the corresponding GDP/Capita figure. This is a very small sample size, but one that gives enough of a suggestion that median household income could give a significantly different enough figure than GDP whilst offering a more accurate representation of well-being.

Repeating the same exercise with OECD figures on Household Disposable Income gives similar results. Data was collected on all 28 of the listed OECD nations and is available in the statistical appendix, but included here are only the nations from the Gallup table for the sake of aesthetics and comparison:

Table 4: Household Net Adjusted Disposable Income vs GDP/Capita

State	Household net adjusted disposable income	GDP/Cap
Australia	$31 588.00	$46 826.30
Austria	$31 173.00	$47 428.30
Canada	$29 365.00	$44 281.30
Denmark	$26 491.00	$45 696.80
Finland	$27 927.00	$40 951.30
France	$28 799.00	$39 236.10
Germany	$31 252.00	$44 999.40
Japan	$26 111.00	$36 619.90
Korea	$19 510.00	$32 663.80
Luxembourg	$38 951.00	$95 587.30
Netherlands	$27 888.00	$47 967.20
New Zealand	$23 815.00	$36 410.40
Norway	$33 492.00	$66 812.20
Sweden	$29 185.00	$45 067.30
United Kingdom	$27 029.00	$39 124.80
United States	$41 355.00	$52 591.90

Source: OECD, 2013

Overall the data had a similarity in the fact that the Household Disposable Income came in at 65.45% of GDP/Capita again suggesting that GDP overestimates people's well-being. There was a larger Correlation Coefficient of 0.873 between the Household Disposable Income and GDP/Capita. Further research across a larger data set that takes into account times series would be necessary for more certainty but these small investigation matches the suggestion of the Commission (2009) that the household level is important for more accurate well-being understanding as "the available national

accounts data shows that in a number of OECD countries real household income has grown quite differently from real GDP, and typically at a lower rate". Thus all further, and any final, considerations will take into account the importance of the household.

7.3

3. Consider income and consumption jointly with wealth

The Commission (2009), as touched on in *7.1*, explains that, "trends in citizens' material living standards are better followed through measures of household income and consumption" rather than national production figures. The use of income and consumption only offers an immediate short-term context of well-being. To bring in a time element one must consider wealth.

The consideration of income is simple and easily understood, whether through working wage or a pension, how much money does a citizen acquire. The second issue of consumption can be altered for various reasons, are goods overly expensive compared to income, are there shortages or corruptions in the supply line, are certain goods and services banned or difficult to consume. The third, wealth, relates to a person's financial assets and holdings and their change over time. As Dasgupta (2015) stated, "human betterment on a sustainable basis can be assured if, and only if, a country is able to accumulate wealth… economic growth should mean growth in wealth, not growth in GDP."

The judgment of a combination of income, consumption, and wealth can be used at both the national level and the household level. The Commission suggests both and I will look into each consideration. Taking into consideration the previous recommendation of the use of household statistics rather than per capita statistics a composite dataset for household income, household consumption, and household wealth will be created. For national accounts, the use of a 'balance sheet' for the whole economy is suggested.

The Office of National Statistics in Great Britain in recent years has published such a said balance sheet. The National Balance Sheet measures the total net worth of the

United Kingdom by valuing how much the entire nations assets would sell for on the market (ONS).

Table 5: Estimated UK total net worth by sector, 2014

£ billion	
Sector	Net worth
Households and NPISH	9,443
Non-financial corporations	-732
Financial corporations	-197
General government	-450
Of which: Central government	-1,009
Of which: Local government	559
Total	8,063

Source: ONS, 2015

Table 6: Value of financial assets and liabilities, 2014

UK £ billion			
Financial asset	Asset value	Liability value	Net value
Monetary gold and special drawing rights	17	9	7
Currency and deposits	6,113	6,215	-102
Debt securities	3,783	3,971	-188
Loans	4,176	4,455	-279
Equity and investment fund shares/units	4,563	4,473	90
Insurance, pension and standardised guarantee schemes	4,341	4,356	-15
Financial derivatives and employee stock options	6,109	6,086	22
Other accounts receivable/payable	439	429	10
Total	29,541	29,995	-454

Source: ONS, 2015

There are two problems that I will touch on with the ONS balance sheet for the UK. Firstly, the goods are valued at market prices and the UK's largest asset according to the data is "dwellings". This means that properties and households. The United Kingdom, particularly London and the South, have remarkably high housing prices. This would be over valuing the "well-being" simply due to inflated prices compared to identical or better housing in other nations. Similarly, such a balance sheet fails to take into account the sustainability of the state. For example, a large amount of wealth,

derivatives, or stocks, that the balance sheets deem positively may come from oil and gas companies that the Commission will later hope to discredit.

I will move on and consider citizens wellbeing in a way that allows easier cross state comparison while satisfying the Commission's recommendation to jointly consider income, consumption, and wealth. The Commission inspired Better Life Index offers a single average score for income and one for wealth, but does not jointly consider the two alongside consumption. Thus I will use a welfare function:

$$w = \frac{1}{3}(I + C + W)$$

Where I = Income, C = Consumption, and W = Wealth. Ideally, each of these figures would be the median of each, for each nation. Unfortunately, median figures are difficult to accurately gain, especially for numerous nations over a numerous time scale. The Commission at various stages recommends Real Household Income, Net National Disposable Income, and Adjusted Disposable Income as suggested income measures.

I will use *household net adjusted disposable income* for the income input, *household final consumption* for the consumption input, and *household financial wealth* for the wealth input.

Table 7: Income, Consumption and Wealth, selected nations

	State	Income	Consumption	Wealth	ICW	GDP rank
1	**United States**	$41,355.00	$30,872	$145,769.00	$72,665.20	3
2	**Switzerland**	$33,491.00	$33,275	$108,823.00	$58,529.80	2
3	**Belgium**	$28,307.00	$19,361	$83,876.00	$43,848.10	11
4	**Netherlands**	$27,888.00	$18,974	$77,961.00	$41,607.50	4
5	**Canada**	$29,365.00	$22,514	$67,913.00	$39,930.60	10
6	**UK**	$27,029.00	$25,848	$60,778.00	$37,884.83	15
7	**Sweden**	$29,185.00	$21,972	$60,328.00	$37,161.63	8
8	**Germany**	$31,252.00	$21,790	$50,394.00	$34,478.80	9
9	**Austria**	$31,173.00	$21,502	$49,887.00	$34,187.27	5
10	**Australia**	$31,588.00	$22,007	$47,657.00	$33,750.77	6

Source: OECD, 2015

The correlation coefficient between GDP/Capita and the ICW metric is **0.775**. While this suggests a strong correlation between the two figures we can see that the ICW has significantly reranked certain states. A clear example would be Norway. Placed first in the GDP/Capita list, the nation falls to 14th in the ICW list. This is due to its remarkably low average wealth statistics. This fall fits our research that emphasizes the importance of wealth on wellbeing and welfare. The previously mentioned work of Deayton (2008) and Piketty (2014) has emphasized the importance of wealth and the commission has recommended the inclusion of wealth when considering welfare.

A further benefit of figures like this is the difficulty in manipulating them compared to GDP. If you were able to increase this ICW by 5% annually as some nations manage with GDP, then I predict you would see a remarkable increase in well-being. Also taken into consideration is the political acceptability of new measures and metrics. This ICW metric uses commonly available figures, keeps a superpower such as the USA highly ranked, but clearly follows the three components the Commission recommends.

7.4

4. *Give more prominence to the distribution of income, consumption and wealth*

Income inequality and distribution have returned as hot topic in recent times again in the light of Thomas Piketty's best seller *Capital* (2014) and various social movements. The Commission's foresight is shown by the fact they too raised these issues too a few years previously. Inequality is seen as something important to prevent but something that is missed by many metrics.

Section 7.3 discusses the Commission's (2009) third recommendation, the consideration of income, wealth, and consumption together, as opposed to production. However, it must be remembered that "average measure of income, consumption and wealth should be accompanied by indicators that reflect their distribution". If there is no consideration of the distribution of incomes and wealth accumulation, then you are

achieving little more than the GDP/Capita measures. They can easily be distorted by a few high earning individuals.

The creation of median measures would be a good solution if acquiring the statistics were not so difficult. Instead, the Commission mentions breaking down these figures into percentiles. Unfortunately, these figures are difficult to interpret and compare. An alternative is possible.

The Commission (2009) recommends, where possible, the use of existing data and measures. A commonly used metric for inequality is the Gini coefficient. Based on the 1912 work of Corrado Gini, in his magnum opus *Variabilita e mutabilita* (Variability and Multability), the Gini coefficient offers a single figure to represent the overall income distribution within a state (Bellu, 2006). While highly complex in terms of how the figure is calculated (Bellu, 2006), the output is easy to understand: a state with absolute equality would have a score of 0 whereas a state with absolute inequality would have a score of 1.

Surprisingly, the Gini coefficient is only briefly mentioned in one small sub-section of the Commission's report. According to the 2012 statistics (the most recent, most complete set of data) the top five and bottom five OECD nations in terms of Gini coefficient were:

Table 8: Gini - highest and lowest performing OECD members

Most Equal (rank)	State	Gini	Most unequal (rank)	State	Gini
1	Denmark	0.249	30	Mexico	0.457
2	Slovakia	0.25	29	Turkey	0.402
3	Slovenia	0.25	28	USA	0.39
4	Norway	0.253	27	Israel	0.371
5	Czech Republic	0.256	26	UK	0.351

Source: OECD, 2015

An acknowledged flaw of GDP is that it, as a mean, fails to reflect any aspect of distribution. However, if one were to combine this figure with a distribution figure, such as the Gini then a more representative metric could be reached. The Commission notes Sen's (one of the Commission's co-chairs) 1976 work in which a welfare function is created by adjusting total income by one minus Gini:

$$W = \mu(1 - G)$$

I will use a similar equation to see if simply adjusting the commonly used GDP/capita by a function of the Gini coefficient creates a more balanced and representative figure.
The most recent most complete data sets were OECD data from 2012. The OECD zone countries have their Gini coefficient listed alongside GDP/Capita from the same year. The GDP/Capita figure was adjusted by one minus the Gini coefficient. This mirrored Sen's 1976 idea but using the more commonly available and commonly used GDP figure in the formula:

$$W = y\ (1 - G)$$

So the newly created welfare function is the GDP/Capita devalued depending on the level of inequality within the nation. The welfare function will punish those nations with higher levels of inequality, shown via a higher Gini coefficient, by decreasing their GDP/Cap figure more significantly.

Table 9: Gini Adjusted GDP: Top five performing OECD member states

State	GDP/Cap (y)	Gini (G)	[GDP/Cap]*[1-Gini]	GDP rank	Gini Rank	Combined Rank
LUX	$90,693.65	0.302	$63,304.17	1	16	1
NOR	$65,394.27	0.253	$48,849.52	2	4	2
CHE	$57,205.37	0.285	$40,901.84	3	12	3
NLD	$46,457.07	0.281	$33,402.63	5	11	4
DNK	$44,250.86	0.249	$33,232.40	9	1	5

Source: OECD, 2015

Table 10: Gini Adjusted GDP: Bottom five performing OECD member states

State	GDP/Cap (y)	Gini (G)	[GDP/Cap]*[1-Gini]	GDP rank	Gini Rank	Combined Rank
GRC	$25,980.03	0.34	$17,146.82	26	25	26
POL	$23,310.22	0.298	$16,363.77	27	15	27
HUN	$22,701.45	0.289	$16,140.73	28	13	28
TUR	$18,437.11	0.402	$11,025.39	29	29	29
MEX	$16,958.57	0.457	$9,208.50	30	30	30

Source: OECD, 2015

This initial outline of GDP/Cap adjusted by Gini coefficient has a flaw in the fact that the adjustment is linear. In reality, inequality does not work on a linear scale. Instead, inequality affects citizens by a bigger magnitude the larger the inequality is. Thus, for more accuracy an investigation should be needed to create a welfare function with perhaps a function of the log of the Gini to create a curve rather than linearity. However, the simplicity of two clear and understandable figures may allow the measure to be more widely embraced, as adding in a function of log (or a similar scaled function) adds complexity that may turn off a 'casual' observer.

The recommendation of the Commission (2009) is to consider the distribution of income, consumption, and wealth, not just GDP/Capita. For this reason I will adjust the joint ICW metric created in section 7.3 in the same way as the GDP/Capita above. If there is a noticeable statistical difference, then the ICW statistic will be used as the Commission has explored the relevance of it over GDP. However, if the two are statistically similar, then one would recommend the use of the Gini-adjusted GDP metric.

Table 11: Gini adjusted GDP vs. Gini adjusted ICW: some selected states

State	ICW	GINI	Gini Adjusted ICW	Gini Adjusted GDP	ICW - GDP
Czech Rep.	$14,237.77	0.256	$10,592.90	$21,376.61	$-10,783.71
Denmark	$31,413.07	0.249	$23,591.21	$33,232.40	$-9,641.18
France	$32,502.90	0.306	$22,557.01	$26,024.52	$-3,467.51
Germany	$34,478.80	0.289	$24,514.43	$30,999.59	$-6,485.17
Greece	$15,188.40	0.34	$10,024.34	$17,146.82	$-7,122.48
Mexico	$9,331.60	0.457	$5,067.06	$9,208.50	$-4,141.44
Slovak Rep.	$11,367.97	0.25	$8,525.98	$19,573.30	$-11,047.32
Switzerland	$58,529.80	0.285	$41,848.81	$40,901.84	$946.97
U.K.	$37,884.83	0.351	$24,587.26	$24,380.70	$206.56
U.S.A.	$72,665.20	0.39	$44,325.77	$31,334.61	$12,991.16

Source: OECD, 2015

Included in this table are the base Income, Consumption, and Wealth (ICW) statistic from section 7.3, the Gini coefficient, along with the both the ICW and

GDP/Capita adjusted by the said Gini coefficient. A difference between the two figures is also shown. The difference shows that the new metric offers on average a figure lower than GDP/Capita with a few exceptions. The largest exception being the United States, due to the new metric giving great weight to the countries high levels of wealth. Similarly, Norway's large deficit is due to it's low amount of average household wealth as shown by the World Bank datasets that much of this information was taken from.

The correlation coefficient between Gini adjusted GDP and Gini adjusted ICW was 0.71457. This shows a relatively strong but not identical correlation between the two figures. This correlation is lower than the direct ICW to GDP comparisons. Thus the involvement of inequality, as shown by Gini, has some relevance. On average across all OECD nations, the ICW figure is $6,418.55 lower than the corresponding GDP figure.[3]

Nations with a large Gini coefficient adjusted GDP/Capita will have a large Gini adjusted ICW statistic and vice versa. However, they are not identically related and the commission suggests a move towards a metric that "jointly considers income, consumption and wealth." While this ICW metric is somewhat crudely made from incomplete data sets it is a starting point and one that satisfies the Commission's recommendations whilst being statistically different enough from GDP.

7.5

5. *Broaden income measure to non-market activities*

The issue here is quite self-apparent. Things that are 'non-market' are usually considered qualitative, immeasurable or difficult to gauge. Black or grey markets are by their very existence difficult to add to statistical frameworks as so much is based on estimates. However, certain non-market activities such as leisure, family, or community can be used. There could be a way to include these measure without falling too far into the qualitative side of things and be dismissed by the mainstream of economics.

There are numerous "services that households produce for themselves are not recognized in official income and production measures, yet they constitute an important aspect of economic activity" (Stiglitz, et al, 2009). A clear example of this kind of

[3] Full data set in appendix

economic activity is child care. A family may pay a nanny to care for a child, or a grandparent may instead provide this service. Care for the elderly, or unpaid work for a family business, or additional education or skill-learning are other areas that fall into this category. These are areas key influences on economic activity but are difficult to measure and interpret.

Community impact could be measured through the share of locally made or grown products or services that are part of the market. While locally produced food may offer no change (or even, theoretically, a negative one) on health, the community link may be positive due to a connection to a local butcher or other small business. Similarly, idea that neighbours share a lawnmower, would have a communal and fraternal positive, but a negative impact on GDP, as less lawnmowers are being bought.

Considerations of leisure time could focus on work hours, part time work, or club or gym memberships. While acknowledging much data is already being collected, the Commission (2009) here recommends that further "Information on how people spend their time that is comparable both over the years and across countries". Unfortunately, having time series data that can be comparable across borders can be problematic due to socio-cultural differences. To give an example, if we were to rank time spent ice skating as a proxy measure of leisure time, then there would be an obvious difference between a Russian response, and say, a Saudi response. This seems like a churlish and facetious example, one may say that there are some cross-border similarities that transcend cultures and could help measure leisure. However, it may not be so simple. The Commission cites a leisure time study in their work and some of the issues 'ranking' the data. For example, citizens of the US generally did not rank time spent cooking or preparing food as a leisure activity and spent small amounts of time on it daily. However, French respondents considered it as part of their leisure activities and placed a large amount of their free time doing it, and placed it highly in their list of priorities. If it is difficult to place data relating to something as universal as eating, then it will be difficult to draft data based on something more subjective.

A concern is that many 'non-market' activities are viewed as being qualitative rather than quantitative. For this reason, they are often viewed as non-scientific or non-

rigorous. This is a problem already mentioned in the economics of happiness section in the earlier literature review.

The idea of using more non-market factors to gauge a nations well-being is being adopted in investigations such as the World Happiness Report. Created by the United Nations Sustainable Development Solutions Network (SDSN) the World Happiness Report is an annual survey that takes looks at happiness on a global level both for individuals and also for nations as a whole. The report (2015) reflects a "new worldwide demand for more attention to happiness as a criteria for government policy".

The report comes from the Sustainable Development Solutions Network, which is a branch of the United Nations. Founded in 2012, it aims to advance on the Millennium Development Goals by creating an interconnected network of science, technology, academia, and the private section to support a new wave of sustainable development. It hopes to solve problems across local, national, and international levels. The World Happiness report is just one of its programs: one where experts and leaders from "economics, psychology, survey, analysis, national statistics, health, public policy and more" (Helliwell, et al, 2015) to come together create an empirical report that helps solidify the role of happiness in crafting government policy.

The report partially aims to remove the focus on GDP when ranking or valuing the performance of a nation. The introductory section to the report (2015) clearly explains, "when countries pursue GDP in a lopsided manner, overriding social and environmental objectives, the results often negatively impact human well-being". Instead the report is pushing towards ensuring nations are pursuing policies that enable citizens to live "better" lives.

This is not to say that GDP or economic values are completely discarded. The World Happiness Report (2015) creates its valuation of a nation based on six factors. It is worth returning to the previously made point about the Commission's discussion about well-being's multidimensional nature. The World Happiness Report's six areas of measure cover a very similar area to the eight measures that the Commission (2009) early in their Report state influence or affect well-being:

Table 12: Similar components of well-being: WHR and CMEPSP

	WHR	**CMEPSP**

1	GDP per capita	Material living standards (income, consumption and wealth)
2	Healthy years of life expectancy	Health
3	Social support	Education
4	Trust – in terms of perceived absence of corruption in both government and business	Personal activities including work
5	Perceived freedom to make life decisions	Political voice and governance
6	Generosity	Social connections and relationships
7	n/a	Environment
8	n/a	Insecurity, of an economic as well as physical nature

Source: WHR, 2015, Stiglitz, et al, 2009

In the World Health Report, Helliwell, et al, (2015) compile their six factors to create a 0-10 scale in which 0 is the worst possible life and 10 is the best possible. The report (2015) found that of the six, social support, income, and healthy life expectancy, were the three biggest contributors. Switzerland was the nation that came out on top with a score of 7.587 with Iceland second, and Denmark third.

The report attempts to mix the more obviously quantitative (GDP, life expectancy) with understandable but vaguer terms (generosity, freedom). The qualitative sections come from self-reporting questionnaires. While the concepts and topics are undeniably useful and affect well-being, their method of acquisition makes them susceptible to ridicule or dismissal from the 'scientific' economic community.

One suggestion would be to endorse the consideration of non-market activities by the Commission but using more acceptable sources than self-reporting questionnaires. For example, use scores from respected global bodies such as Transparency International or Freedom House. Even if these bodies use questionnaires as a small part of their research the fact that it goes through a trusted global leader adds gravitas.

Table 13: Top five Freedom House scores, 2016

Freedom House 2016	Finland	Iceland	Norway	San Marino	Sweden
Score/100	100	100	100	100	100

Source: Freedom House, 2016

Table 14: Top five Transparency International Scores, 2015

Transparency International 2015	Denmark	Finland	Sweden	New Zealand	Netherlands
Score/100	91	90	89	87	87

Source: Transparency International, 2015

Table 15: Longest life expectancy, 2013

State	Japan	Spain	Andorra	Singapore	Switzerland
Life Expectancy (WHO 2013)	84	83	83	83	83

Source: WHO, 2013

Increasing life expectancy is an obvious target for developing nations and a general statistic that government's ought to keep an eye on, but I would argue is too broad of a figure to use as a proxy well-being measure. However, both the Freedom House and Transparency International figures cover issues suggested as important by the Commission's recommendations. These include political voice, as cited in the well-being components above, and some areas covered in the next section *7.6.*. Furthermore, as noted, Frey and Stutzer (2002) explain that, "substantial well-being benefits from factors such as improved accountability, effectiveness and stability of government, the rule of law, and control of corruption".

As both metrics are scaled out of 100, they can easily be combined into one single figure. For this combined Freedom House Transparency International figure, the top ten ranking nations using the most recent available data would be:

Table 16: Combined Freedom House and Transparency International score

State	FH	TI	MEAN
Finland	100	90	95
Sweden	100	89	94.5
Denmark	98	91	94.5
Norway	100	87	93.5
Netherlands	99	87	93
New Zealand	98	88	93
Canada	99	83	91
Switzerland	96	86	91
Iceland	100	79	89.5
Luxembourg	98	81	89.5

Source: Freedom House, 2016, Transparency International, 2015

A key area touched upon by the Commission (2009) is leisure time. If citizens of a nation are able to afford themselves more leisure time, to choose not to work, then it makes sense to describe them as having a higher standard of well-being. Unfortunately, there are sociocultural explanations for why differing nations have differing levels of leisure time and work productivity that make a side-by-side comparison of Japanese, Greek, and French work-leisure-productivity numbers misleading or less useful.

Table 17: Most hours of leisure in OECD

Ranking	**1**	**2**	**3**	**4**	**5**
Leisure Time	Denmark	Spain	Belgium	Norway	Netherlands
Hours/week	16.06	16.06	15.71	15.56	15.44

Source: OECD, 2015

Table 18: Fewest hours of leisure in OECD

Ranking	**Last**	**35**	**34**	**33**	**32**
Leisure Time	Turkey	Mexico	Poland	Canada	USA
Hours/week	13.42	13.89	14.20	14.25	14.27

Source: OECD, 2015

The table shows the highest and lowest ranking OECD nations in terms of their average weekly leisure time. While Denmark and Norway have regularly been near the top of many of my data sets, and Turkey and Mexico near the bottom, other nations are surprising. Specifically, USA and Canada being so near the bottom of this list. The US, as noted in other sections, has, for example, high average income and wealth rankings (*7.3)*. However, if US citizens have less time to enjoy their spoils then there well-being may be over exaggerated. The Spanish may have a lower income and wealth (*7.3)* but if their citizens spend more time *enjoying* their earnings then it can be suggested that they have a higher level of well-being. This shows the difficulty of using a single figure to interpret well-being.

While the inclusion of non-market activities is encouraged, to create a metric than completely ignores the markets is not advisable. The markets create wealth and income that have been shown in previous sections to have large positive impacts on well-being. Further non-market possibilities are touched on in *7.6.*

7.6

6. Quality of life depends on people's objective conditions and capabilities. Steps should be taken to improve measures of people's health, education, personal activities and environmental conditions. In particular, substantial effort should be devoted to developing and implementing robust, reliable measures of social connections, political voice, and insecurity that can be shown to predict life satisfaction.

The Commission explain that a citizen's well-being "depends on people's health and education, their everyday activities (which include the right to a decent job and housing), their participation in the political process, the[ir] social and natural environment" (p. 15). The question is how to measure such topics.

Looking at World Happiness Report referenced previously (*7.5*) similar areas are shown to affect citizen's happiness. Particularly health, social support, trust and lack of corruption, freedom, and generosity. This follows the work noted in both the literature review that health, education, and political voice will affect citizens' well-being Frey and Stutzer (2002). The issue arises with creating a metric that covers these while being considered "*objective…robust, reliable*".

Disregarding those nations who enforce compulsory voting, voter turnout can be interpreted two ways. High voter turn out can easily be viewed as a high-level of civic interaction thus a positive example of citizens well-being. However, the high turnout could be due to unhappiness in the current regime and a representation of low well-being. Similarly, a low voter turnout could be due to various voter repression tactics or a reflection of citizens' 'contentness' with the status-quo. Thus looking at voter turnout would not be wholly helpful. That said, measuring political freedom is an important factor in well-being reaffirming areas covered in the previous section regarding non-market rankings such as Freedom House and Transparency International. One would consider including voter turn out, showing political involvement, whether for positive or negative reasons, alongside a corruption grade from one of the independent bodies noted, as part of a larger measure of well-being.

Social connections are important and included in research by many statistical offices and devices such as WHR and Gallup polls. While it is easy to define a social connection, it is difficult to clearly count or record them in an accurate way. The Commission notes that official membership numbers of clubs and associations are not accurate representations of social connectivity. The reasoning is not explained but is one that I believe can be well understood. People may have membership in a club but no interaction with other members or with the club itself other than receiving a monthly e-mail newsletter.

For example, the United Kingdom has a population of roughly 64 million yet the Royal Society for the Protection of Birds remarkably has a registration of over 1 million. This is one of the highest memberships of a voluntary organization in said country. While membership offers such gratuities as free entry to nature reserves and a quarterly magazine an increased social connectivity is no guarantee. Stating that approximately 1.5% of the population are signed into a single association does look positive, and is, but to use it as a gauge of the nation's well-being would be a stretch at the very minimum. Certain citizens can be signed up for membership of hundreds of organizations from behind the safety of their computer screens while those with healthy social connections may not formally be members of any group.

The Commission's (2009) suggestion for better measurement of social connectivity is that "surveys should be implemented". However, as stated, this author is wary of the issues of self-reporting questionnaires and their bias. Rather than a 1-10 scale (as if often used) asking recipients to grade their social connectivity, the questions could refer to the amount of time given towards social interactions. For example, the question could read:

> *How many hours per week are given to non-employment interactions outside of the household?*

This question would thus remove work place and household interactions and gauge how often a citizen leaves their two commonplace locations to engage in civic socializing with other citizens.

Using life expectancy at birth as a measure of well-being works for less-developed nations as a clear guide of improvement, but once a certain level has been reached then increases offer a less clear improvement of overall well-being. Japan has been listed near

the top of life expectancy tables for numerous years but this ageing population is often listed as an economic problem as it has not been offset by birth-rates, immigration, or overall growth to pay for social services.

The overall best measure from this section is education. The Commission (2009) notes that "better-educated people typically have better health status, lower unemployment, more social connections, and greater engagement in civic and political life". Therefore, if one were to include a proxy measure for social well-being an education score seems appropriate. The problem arises in how to measure a standardized level of education across nations. Not all nations take the same exams, take exams at the same age, or even take exams. Measuring the enrolment rate of students can be affected by whether the state has compulsory or optional study, and until which age schooling is offered.

One must consider which direction the measure is skewed. If the level is 'too low' such as a basic literacy or numeracy rate, then it offers a good target for developing nations but little for developed nations. Similarly, if the metric is 'too high' such as number of Doctoral students, then it has a different bias.

The Education Index (EI), part of the Human Development Index (HDI), is calculated by the United Nations Development Programme. It is a measure combining the 'mean years of schooling' and the 'expected years of schooling'.

The most recent data for the Education Index is calculated from 2013. The data is compiled in such a way that 1 would be a perfect score and 0 the worst possible score. The measure is interesting and useful but lacks an insight into the *standard* of the education. The information refers to the *amount* of education offered and amount of education studied. Some of the nations have very lowly amounts of education offered in terms of time, but one could state that this 'amount' of education is also a dose of low quality education. Some of the states near the top of the list in terms of 'amount' of education offer the highest level of education the world has to offer. Thus these nations are doubly benefitted in a way that is not shown via the EI alone.

Table 19: Education Index of highest ranking OECD states

Rank	State	2013 score
1	Australia	0.927
2	New Zealand	0.917
3	Norway	0.910
4	Netherlands	0.894
5	United States	0.890
6	Ireland	0.887
7	Germany	0.884
8	Lithuania	0.877
9	Denmark	0.873
10	Czech Republic	0.866
11	Korea (Republic of)	0.865
12	Slovenia	0.863
13	United Kingdom	0.860
14	Estonia	0.859
15	Israel	0.854
16	Canada	0.850
17	Iceland	0.847
18	Switzerland	0.844
19	Sweden	0.830
20	Poland	0.825

Source: UNDP, 2013

In 2011, a branch of UNESCO (United Nations Educational, Scientific and Cultural Organization), the International Standard Classification of Education (ISCED) met to create a new (updating and replacing their 1999 model) facility of educations statistics and indicators. The aim of ISCED is to create a standardized framework for evaluating global educational levels. The group began their new data collection in 2014. However, the data is not fully available and only has a short time frame regardless. By creating a standardized global measure, the ISCED would allow you to adjust the time based scale of the EI to account for the standard of the education in that nation. This figure would then offer a solid proxy score for social well-being.

7.7

7. Quality-of-life indicators in all the dimensions covered should assess inequalities in a comprehensive way.

The Commission (2009), again as with *7.4,* advocates the importance of the consideration of inequality. This time the inequality does not refer to the spread of wealth, income, or consumption, but the consideration of the inequality across the quality-of-life indicators in *7.5* and *7.6* such as education, health, and freedoms.

These differences and inequalities relate to "socio-economic groups and generations" (Stiglitz, et al, 2009). This would refer to the unequal spread of, for example, the happiness curve that is noted by Easterlin (2004). The young and the old have the highest level of happiness whereas those aged approximately 30 – 50 have a large drop off. These inequalities are lost in large aggregate averages. Similarly, there may be gaps in education for the poor, or based on gender.

In particular, the Commission calls for "special attention" (p. 15) to be paid to the inequalities that have arisen due to immigration in the modern globalized world. The World Happiness Report notes in a large demographic break down that there is a significant happiness gap between nationals and foreign nationals. Those who are immigrants in a nation have an average happiness much lower than domestic citizens. A more in-depth investigation of the break down of these immigrant's backgrounds, such as education, marital status, and reasons for emigrating could shed more light on the causes for a discrepancy.

7.6 spoke of the importance of education on other aspects of well-being. A more comprehensive report into the inequalities of this break down could help asses which areas are most closely interlinked. Investigations into these inequalities will be assisted by the implementation of the next recommendation, *7.8*, which advocates the increased scope and powers of statistical offices.

7.8

8. Surveys should be designed to assess the links between various quality-of-life domains for each person, and this information should be used when designing policies in various fields.

While each individual measure of quality of life, such as age, gender, or income, is important individually, *7.8* is noting the importance of considering combinations of these measures. For example, the Commission (200) cites the two categories of health and poverty. The reduction of quality of life for those who are both "poor and sick far exceeds the sum of the two separate effects. A focus on only reducing sickness or only reducing poverty may leave these dually affected citizens behind.

When policy is being crafted, more relevant and specified data should be used rather than overarching umbrella figures. For example, when crafting pension reform policy, the view should not be on its effect on GDP or GNP et cetera, but how does it affect selected quality-of-life and wellbeing indicators for the over 65s. This seems an obvious or common sense suggestion. But common sense can be quite lacking during the policy cycle.

One must consider how does an improvement or decline in one quality of life area affect other areas. As noted in *7.6* education is acknowledged as creating a better "health status, lower unemployment, more social connections, and greater engagement in civic and political life" (Stiglitz, et al, 2009). Similarly, much is known in the public eye about gender and race disparities, but much greater research ought to be carried out so that policy makers can understand where their ever limited resources can have greatest impact.

While the recommendation focusses on designing surveys to find out about the interlinked nature of certain quality of life indicators, I believe this can be applied by central governments or policy makers. Even without the use of surveys to collect respondent's views, much data exists within the current policy cycle that can be used. For

example, governments know which areas are of lower income, which areas are less healthy, and have lower rates of educational success. Thus using the Commission's example of the "poor and sick" being doubly left behind, then a policy maker can see an area that has low income, low health rates, and poorer education standards and consider that work on improving these areas will have a positive magnitude much greater than increasing the healthcare in an already affluent or educated area.

An important point made in *7.8* is that the focus should be on how quality-of-life is altered for "each person". Many areas of this paper refers to large averages and statistics thus it is important that this recommendation returns the idea of policy for individuals not just the adjustment of averages and statistics.

Due to the Commission's repeated reference to the use of surveys I must again point out scepticism of their over use. As noted in the literature review, Kahneman et al's (2006) point about respondent's only creating their views after reading the questionnaire and the influence of response bias. There is great importance of of the intertwined nature of quality-of-life indicators especially greater understanding that the consequence of multiple disadvantages "far exceed the sum of their individual effects" (Stiglitz, et al, 2009). This idea is one that should be supported, but much of this information can be compiled from existing, or slightly advancing, data sets held by governments or statistical offices.

As stated by McCloskey, (1983) "One can literally get an audience of economists to laugh out loud by proposing ironically to send out a questionnaire on some disputed economic point". I admit my own scepticism to over-reliance on solely data collected from questionnaires. However, the data can be collated side by side with more objective statistical data in order to give a more rounded body of work.

7.9

9. Statistical offices should provide the information needed to aggregate across quality-of-life dimensions, allowing the construction of different indexes.

The Commission (2009) recommends an increased role and scope of independent statistical offices. Many nations have such offices but further increases in data collection seems unlikely in a period where citizens have a distrust of governments holding too much personal data. Statistical offices are key components of, and are highly active in, the policy cycles, but as they rely on government funding there is an inherent bias, perceived or otherwise. However, central banks operate with a certain independence so there is a clear precedence for statistical offices to be more vocal and active, whilst remaining apolitical.

Large amounts of data collected and separated into numerous cross-sections will allow more complex issues to be understood. The larger the data set the more trustworthy results will be. A "plurality of indicators" will allow advancement in the construction of indices that are not currently possible due to data gaps.

For example, using a cross section of income based on age to determine if the over 75s are looked after. It would be difficult to correctly judge the 'income' numbers without a comprehensive understanding of the state's pension, housing, and elderly care services and policy. However, for a state to judge its own policy goals then it would be helpful. If a policy goal was to decrease youth un- and under-employment then a cross-sectional data set comprising of income, education, age, among others, would be helpful. However, because of the political nature of many of these claims then issues about misuse or abuse of measurements could occur.

An area that can prompt debate is the Commission's (2009) insistence that "subjective measures of the quality-of-life should be considered" when compiling data within a statistical office or government database. With the ever increasing mathematization of economics this is, in this author's opinion, a good suggestion with regards to realigning economics towards its roots in morality and human behaviour. However, in the scope of this paper and economic measurement in the policy cycle, the more subjective measures become, the less likely they are to be adopted by mainstream economics in the current climate.

7.10

10. Measures of both objective and subjective well-being provide key information about people's quality of life. Statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities in their own survey.

There is room to incorporate subjective measures into official data such as life evaluation questionnaires being added into censuses. Qualitative data can be added to give depth to qualitative statistical data. A spreadsheet of economic data can offer little insight, so the addition of life evaluation type information can add a depth of understanding for policy makers.

Research by Boarini, Johansson, and d'Ercole (2006) shows that survey-based data on happiness and life-satisfaction across OECD countries are only weakly related to levels of GDP per capita. Many of the alternate economic measures in sections *7.1* through *7.6* still had positive correlation to GDP/Capita. Therefore, it is important to include survey based data as a counter balance.

Several surveys are commonly used and cited by academics in the field of economics. As noted in the literature review, Angus Deaton (2008) relied heavily on Gallup's surveys and results for work that eventually granted him a Nobel Prize. The Commission (2009) notes that "the types of questions that have proved value within small-scale, unofficial surveys should be included in larger-scale surveys undertaken by official statistical offices". Certain questions from the Gallup poll that Deaton used, such as whether a citizen has confidence in the state's healthcare or medical system, could be deemed too 'political' to be included in something like a national census. More open ended and less politically dangerous questions, while still covering the same general topic, could be included. For example, the Gallup poll also enquires, "are you satisfied or dissatisfied with your personal health?" (Deaton, 2008). This would acquire the desired data without policy makers worrying about an overly politically sounding topic.

This data can be directly collected by governments or trusted policy think tanks. The direct nature of responses can also help regionalized problems that may be missed in nationwide surveys. Concerns may be specific to only a small demographic or region, such as pensions to the older demographic, immigration to a certain region, employment

to recent graduates and so on. However, this would increase the need for more funding for statistical offices, or even the creation of independent statistical offices in certain nations. With a wave of global austerity coincided with a global populace suspicious of government abuse or misuse of large scale data collection, this seems to be an unlikely area of growth. Similarly, the likelihood of a statistical office increasing its research into "people's…hedonic experiences" is one that is unlikely to gain much support from political establishment.

Recommendation 10 is one that may appear less influential or ground-breaking. However, to have mainsteam economics embrace something so openly qualitative would be something of a coup. *7.10* is one that could be, and will be, most easily and quickly implemented by governments. The inclusion of additional surveys or questionnaires within a regular census is simple and would have benefits as shown by Stiglitz, et al (2009).

7.11

> *11. Sustainability assessment requires a well-identified dashboard of indicators. The distinctive feature of the components of this dashboard should be that they are interpretable as variations of some underlying "stocks". A monetary index of sustainability has its place in such a dashboard but, under the current state of the art, it should remain essentially focused on economic aspects of sustainability.*

Many of these metrics already exist. However, the Commission criticizes them for only treating environmental damage as a 'cash' reduction in GDP. This is viewed as demeaning the true value of the environmental destruction. For example, subtracting the value of timber from the GDP total to account for forestry reduction does not take into account all the future years of the missing trees. However, I would state that if the dollar-based approach works then it should be embraced. Governments and businesses, whether right or wrong, response to financial imperatives. Thus following green GDP figures based on monetary value rather than a 'true' green environmental understanding could

still have positive effects on the environment and sustainability. Therefore, I would not support the Commission's complete dismissal of a figure such as green GDP entirely.

The support for clear environmentally sustainable levels is commendable but the figures seem abstract to any non-member of the scientific community. Stating the greenhouse gas levels cannot exceed 400ppm is something that lacks context for an average citizen. Comparatively, if you explain that burning fossil fuels reduces GDP, or income, or another clear figure, then perhaps a larger number of a states' citizens would be responsive to an issue that has huge implications on our global future.

In 1972, William D. Norhaus and James Tobin, then both professors at Yale University, created a GDP-based measure called *Measure of Economic Welfare* as part of their seminal *Is Growth Obsolete*? This metric took GDP and removed any environmental damage from the figure among other adjustments. While a positive start to incorporate environmental consequences into macroeconomic measures, there are three issues in only removing the dollar cost of the destruction.

The first issue is that the problem may not be discouraged from occurring just by the subtraction of it from GDP. If there are side-effects that still are beneficial to the state, or people within the state, then it may continue. The second issue is that the environmental destruction has long term often exponential effects that are not truly explained by a single annual dollar reduction in GDP. The third is that it reduces a complex environmental issue simply down to dollar signs on a spreadsheet rather than encouraging citizens to understand, appreciate, and protect their surroundings.

To use the example of deforestation, the first issue would relate to the fact that loggers pay taxes, create logging towns with doctors and teachers, means that the removal of GDP relating to the value of trees destroyed could be offset by other activities related to the environmental destruction. The grey-area of which things are considered the 'environmental destruction' that should be removed from the GDP measure would open up another area of statistical manipulation.

The second problem would relate to the fact that subtracting the, for example, $100,000 value of the timber removed from annual GDP does not accurately represent the true value of the price or value of the lost forest. This links into the third problem. By considering it as "$100,000 value of timber" rather than acres of green forest in part of a

balanced and complex econ-system one is somewhat desensitizing themselves from the environment.

The Commission (2009) also quotes and mentions the Nordhaus and Torbin paper and points out that its main flaw was the focus on the dollar price of the lost good rather than any intrinsic value beyond that. While it is true that an intrinsic love and appreciation of the environment would be beneficial, much of our modern world is driven by balance sheets and accounts. Thus a financial penalty, while not perfect, could have the required outcomes.

A nation that did implement an environmentally weighted GDP measure was the People's Republic of China in 2004. Unfortunately, due to such politically unacceptable levels of failure on their own new metric, the practice was abandoned in 2006 (Rauch and Chi, 2010).

The Commission (2009) suggests a "set of well-chosen physical indicators" of environmental sustainability in part of a *dashboard*. While hoping for a "large eclectic dashboard" with suggested measures including: "smog- forming pollutant emissions, nutrient loading to water bodies, the abundance of key specified natural species, rates of conversion of natural habitats to other uses, [*and*/*or*] the proportion of fish catches beyond safe biological limits." The authors acknowledge this as unlikely, but plead that a "pragmatic compromise" may be reached to include a small logical dashboard, perhaps including some of the mentioned.

The Commission notes the flaws of the green GDPs only accounting for environmental damage by negatively charging or adjusting the overall GDP figure. The areas that these metrics miss are measures of "**overconsumption** or… in dual terms… **underinvestment**"[4] (p.67). Thus they proceed to suggest the possible use of the World Bank crafted Adjusted Net Savings (ANS). The World Bank defines ANS as measuring, "the true rate of savings in an economy after taking into account investment in human capital, depletion of natural resources and damage caused by pollution." The human capital investment is determined by adding education expenditure to the state's net national savings. Subtracted from this figure are environmental concerns such as energy, mineral, and net forest depletion, as well as carbon dioxide. A key note to make is that

[4] The Commission's emphasis, not mine

the World Bank calculates two different ANS figures. One set contains *particulate emissions damage* within the environmental subtractions, one set does not. Particular emissions include Sulphur Dioxide, a common output of smoke stacks at factories that has many negative effects such as acid rain (UK Gov, 2015). As ANS will be used to gauge environmental sustainability in this instance, it would seem absurd to choose the option that leaves out additional pollutants, thus I will advance with Adjusted Net Savings, including particulate emission damage.

Beyond this dual option, the ANS has two more options. It is calculated either in total current US$ figure or as a percentage of Gross National Income (GNI). The percentage figure gives a clearer indication of the progress of failure of a nation, as gross figures are tougher to compare state to state. Thus I will proceed with Adjusted Net Savings, including particulate emission damage (% of GNI).

Ranked on 2013 World Bank data, the most complete most recent year of data, the best five and worst five performing OECD nations are as listed below:

Table 20: Adjusted Net Savings, top five OECD nations

Country Name	**2010**	**2011**	**2012**	**2013**
Norway	15.91%	17.40%	20.39%	20.29%
Korea, Rep.	20.13%	19.69%	18.28%	18.32%
Switzerland	21.61%	18.58%	18.89%	18.03%
Sweden	18.54%	18.98%	18.44%	17.93%
Netherlands	14.74%	16.30%	16.82%	16.45%

Source: World Bank, 2013

Table 21: Adjusted Net Savings, bottom five OECD nations

Country Name	**2010**	**2011**	**2012**	**2013**
Greece	-8.70%	-10.80%	-6.71%	-5.84%
Portugal	-2.11%	-0.51%	-0.19%	2.32%
Italy	3.24%	3.13%	2.56%	3.02%
United Kingdom	4.09%	4.84%	3.64%	3.34%
Japan	4.79%	3.46%	3.63%	3.46%

Source: World Bank, 2013

It is positive to note that all but one of the OECD countries are in positive figures. However, having so many well-developed nations only in low single figures is both surprising and disappointing. For the sake of a context, the lowest scoring states globally were Guinea (-47.75%), Liberia (-29.53%), and Democratic Republic of Congo (-29.39%) with a global average of 8.37%.

A flaw of ANS as noted by the Commission (2009) is that by calculating the figures per state, the global nature of sustainability is missed. While acknowledging this as true, the criticism can be leveled at any metric mentioned so far: income, wealth, production, can all be manipulated via the lens of state boundaries. Adjusted Net Savings offers a simple look at whether a nation is heading towards sustainability or unsustainability, taking into account a combination of human, economic, and environmental variables. While a percentage figure would be difficult to use as a singular figure to possibly 'replace' GDP, the inclusion of such a percentage gauge would be very useful in a dashboard.

7.12

12. The environmental aspects of sustainability deserve a separate follow-up based on a well-chosen set of physical indicators. In particular there is a need for a clear indicator of our proximity to dangerous levels of environmental damage (such as associated with climate change or the depletion of fishing stocks.)

When the Commission was written in 2009 the authors noted that there ought to be a signal for when there are "increases in atmospheric concentrations of greenhouse gases associated with proximity to dangerous levels" or "proximity to dangerous levels" of climate change (p. 18). Unfortunately, seven years later, we are already beyond many of these levels. A key body, the United Nations Environment Program (UNEP), aims to reach the mutually agreed upon 2030 target of keeping the increase in global temperature below 2℃. However, whereas the Commission talks of avoiding proximity to dangerous levels, UNEP's mission statement is to "bridge the gap" (UNEP, 2015) between current levels and a reduction to reach target levels. Humans already ignore the *dangerous levels* quoted by the scientific community.

Enforced on January 1, 2016, the United Nations' Sustainable Development Goals are seventeen goals aimed at altering global development over the next fifteen years (UNSDG). The thirteenth goal, *Climate Action*, states that "It is still possible, with the political will and a wide array of technological measures, to limit the increase in global mean temperature to two degrees Celsius above pre-industrial levels" (UNDP).

Unfortunately, this statement, as with the UNEP about bridging a growing gap, has a pessimistic and ominous tinge to it. We, as a globe, are already beyond the dangerous precipice attempting to claw our way back. However, perhaps this will create a more positive response from the world community. Whilst coasting towards these dangerous levels few were concerned; even fewer changes their ways. Now that we are in a panicked response mode, more things may change for the positive.

When considering any alternative economic measures, it is now concrete that sustainability must be considered. For example, when measuring consumption, one could use Actual Final Consumption (AFC). AFC only considers 'positive' consumption within the state and removes 'defensive' expenditure (Stiglitz, et al, 2009). Thus, spending on military, cleaning oil spills, and prison spending by the government are no longer counted in consumption statistics.

As there are so many intertwined aspects to climate change, it would be possible to break down the overall problem into manageable and understandable areas. UNEP's Reducing Emissions from Deforestation and Forest Degradation (REDD) looks at nations forestry actions. Various deforestation actions contribute to around one fifth of all global gas emissions. This is below only the energy sector, but quite remarkably more than the entire transportation sector (REDD, 2016). Unfortunately, the UN-REDD program only receives support from 64 nations around the world. This is primarily due to it being targeted at developing nations. This 'two-tiered' approach is troubling. Environmental degradation is a global problem, not one that can be divided separately between groups of nations.

The Commission wishes for a "separate follow-up" to the environmental issue due to the difficulty of being able to combine varied inputs from varied fields. Such composite indices become flawed when, for example, you attempt to combine carbon dioxide emissions and unemployment into one figure. The Commission (2009) uses the analogy of a meter on a car that tells you a combined figure of remaining gasoline and current speed. Both are very important statistics; but when combined into a single figure they are no help to you. Thus, a dashboard of important critical information should be considered.

Chapter 8
Application

In its preamble the report comments that policymakers are like pilots without a compass. However, pilots do not use simply a compass to fly, they use a combination of several devices and tools. GDP/Capita may be a suitable compass, explaining the direction the economy is heading, but much more is needed. The Commission refers to the need for a *dashboard* in several sections. Thus, one will create a dashboard from the areas of the twelve recommendations deemed most advantageous.

A dashboard is necessary as one cannot combine too many varied sources of data into a single figure to represent overall economic well-being; GDP/Capita has taught us this. Tying together leisure measured in hours, income measured in a monetary figure, and carbon emissions in tonnes of gas would give you a number that in theory ought to paint you a simplification of a complex picture but would in fact tell you very little. Instead, I believe that the prevailing theme of the commission is the necessity to move away from the idea of offering a cure-all single figure, rather a dashboard. This dashboard is explicitly stated for the environmental section but can be inferred from the numerous suggestions through the economic and well-being sections too. Here I will suggest a simple five-point dashboard covering aspects of the three main areas covered by the commission.

1. Income, Consumption, and Wealth (non adjusted)
2. Gini coefficient
3. Freedom House Transparency International combined score
4. Education Index
5. Adjusted Net Savings, including particulate emission damage (% of GNI)

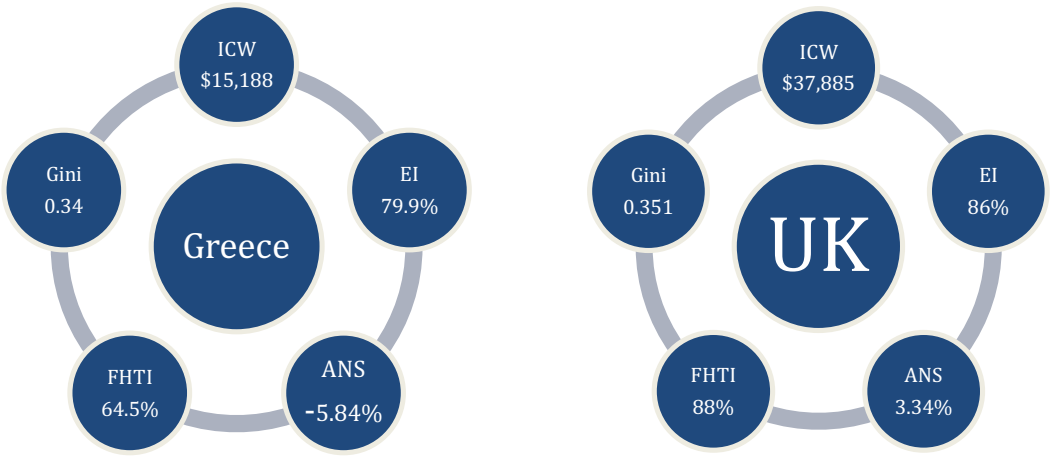
These five areas cover each of the 12 recommendations and the three larger focusses of classical economic issues, quality of life, and environmental sustainability. ICW represents existing economic measures that better represent well-being than GDP. The Education Index acts as a proxy for non market activities, as quoted research has

shown education has a larger influence on well-being than other measurable factors. The inclusion of the Gini coefficient offers an insight into equality, which crosses boundaries of each of those areas. Finally, ANS offers an economic representation of environmental sustainability. There is a sustained difficulty of combining environmental sustainability into the dashboard but ANS offers a good solution.

The ICW figure is an original creation complied from World Bank and OECD data. There is no maximum or minimum 'score'. The Gini coefficient is collected from the OECD data bank. This is presented in it's raw 0 to 1 form. The FHTI is an original creation compiled from Transparency International and Freedom House's research. Both individual figures work on a 0 to 100 scale. The combined score does the same and is presented as a percentage figure for easier understanding. The Education Index is taken from the research of the United Nations Development Program. It too is presented on a 0 to 100 scale as a percentage. Similarly, Adjusted Net Savings is a percentage, but with a range from -100 to 100.

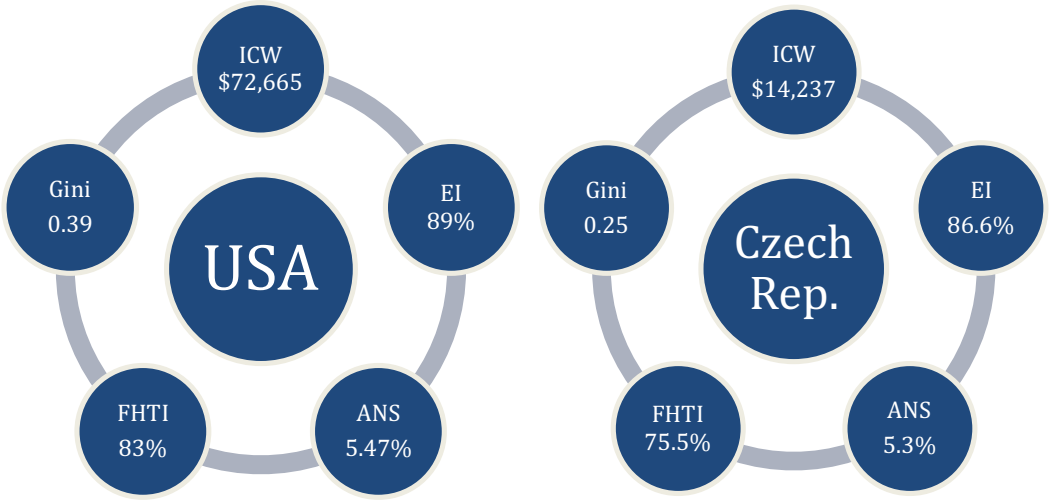
Despite the Gini adjusted ICW score having a lower correlation coefficient with GDP I have chosen to use the regular unadjusted ICW figure. This is for various reasons. Firstly, the ICW statistic is one that is has not been tested with great vigour or rigour. Thus until further work is done into the area, adding in a fourth variable of the Gini coefficient is not a sensible decision. Secondly, by removing the inequality variable, wealth remains more heavily weighted, and as Dasgupta (2015) and others have stated, wealth that heavily influences and represents well-being. Finally, allowing the Gini coefficient to be a separate component of the dashboard, rather than worked into the ICW figure, allows to give an overall impression of inequality.

Figure 3 & 4: Well-being dashboard for Greece and United Kingdom



Attempts were made to create example dashboards for underdeveloped states such as the Democratic Republic of Congo in order to offer extreme context and comparability to the OECD states. However, there was difficulty due to incomplete data sets. Thus an example of four states are given, all from the OECD. The chosen examples are of the United Kingdom, United States of America, Greece, and Czech Republic.

Figure 5 & 6: Well-being dashboard for USA and Czech Republic



The decision has been made to completely remove any GDP figures from the dashboard. Many, such as the EU *Beyond GDP* group, and the developers of HDI, critique and criticize GDP but then puzzlingly continue to use the figure in their work. If GDP is not a suitable measure of well-being, as research has shown (Easterlin, 1974, Easterlin and Angelscu, 2009, Frey and Stutzer, 2002), then it ought to be completely discounted from proceedings. This paper would lack authenticity and authority if after many pages of criticism GDP remained.

The dashboard and its use of several measures would minimize the impact of "measurement fraud" and the effect of Goodhart's Law. The dashboard is made up of existing measures and metrics, or compilations of existing metrics, thus can be easily adopted.

One clear point from the commission is the interest in government statistical offices collecting qualitative data rather than just quantitative. While this is done on small scales by organizations such as Gallup, there could be a simple inclusion of questionnaires in the national census. These could be anonymous and cover some of the questions already used successfully in something such as the World Happiness Report. This larger sample size would reduce the impact of *biased questionnaire responses* skewing data.

Conclusion

Policy makers need suitable instruments to guide them when attempting to improve the livelihoods of their citizens. In order to gauge the success of these policies one needs a suitable measuring device. This is not GDP. GDP has been shown over this paper not to accurately represent well-being. A group of prestigious, world-renowned, Nobel prize winning economists crafted a worked on the Commission on the Measurement of Economic Performance and Social Progress and a report that offered a dozen recommendations to remedy this issue. This paper has investigated those recommendations and crafted them into an approachable and understandable dashboard. Alongside this dashboard, policy makers should look to include and implement life satisfaction questionnaires into censuses or other government data collection.

The Commission (2009) put forward suitable suggestions and measures to move away from the use of GDP as a measure of well-being. Despite offering a plethora of alternatives and working suggestions, few of these were successfully implemented. My work has shown that a complete move away from GDP can be made without abandoning mainstream economic thoughts and practices. By expanding one aspect of the Commission's work, the suggestion of a dashboard, one is able to prevent over reliance or too much weight being granted to one metric. GDP is still overemphasized and de facto used as a well-being indicator. However, through the adoption of the five-point dashboard and increased collection of self reporting and subjective data, one would now be able to more successfully navigate the, and through the, economy.

The Commission (2009) shows that it is necessary to alter perceptions away from GDP centric focus of well-being and economic performance. However, the implementation of such ideas are more difficult. It is a difficulty to create a dashboard of measures that toes the line between being too simplistic and being too complex. Projects such as the OECD Better Life Initiative offer far too much data in a single snapshot. Whereas a figure such as HDI still relies on GDP as a component. I believe that my work has created a less congested and more comprehensible dashboard that succeeds in implementing the findings of the Commission. This paper's dashboard implements the

findings of the Commission in a professional and academic manner that will allow better understanding of global wellbeing and allow more successful policy to be implemented.

Future research should be conducted in several areas but particularly in developing the combined Income, Consumption, and Wealth statistic. This can be focused on investigations into whether the three areas should be equally weighted within the formula. Tightening up of the methodology should also be carried out to reduce errors relating to exchange rates and inflation. The ICW statistic is an original creation that is directly inspired by a recommendation of the Commission.

A second area would be an investigation into which questionnaire and surveys questions and results offer the most consistent and accurate representation of well-being and incorporate them into a future dashboard.

While recommending more research into the Income, Consumption, and Wealth statistic, the statistic itself ties together several strands. The Commission (2009) recommended a larger focus on wealth, this is a recommendation made by many others such as Dasgupta (2015), Deaton (2008), and Piketty (2014).

This paper, through the extensive literature review, reaffirmed that GDP is not a suitable measure of well-being. Instead, policy makers require an alternative to ensure they can best improve their citizens' lives. The Commission for the Measurement of Economic Performance and Social Progress offered clear and tangible suggestions and recommendations for how such a metric could and should be created. By implementing the recommendations of the Commission, this paper has compiled a dashboard of metrics that would better represent well-being.

Bibliography

Bellu, Lorenzo Giovanni and Liberati, Paolo, 2006. *Inequality Analysis – The Gini Index.* New York: United Nations Food and Agriculture Organization. Available at: http://www.fao.org/docs/up/easypol/329/gini_index_040en.pdf

Boarini,R., Å. Johansson and M. Mira d'Ercole, 2006. Alternative Measures of Well-Being. *OECD Economics Department Working Papers*, No. 476.

Chrystal, K. Alec., and Paul D. Mizen 2001. *Goodhart's Law: Its Origins, Meaning and Implications for Monetary Policy*. London: City University Business School.

Coase, R.H.. 1994. "Essays on Economics and Economists". Chicago: University of Chicago Press.

Covert, T., Greenstone, M., & Knittel, C. R.. 2016. Will We Ever Stop Using Fossil Fuels?. *The Journal of Economic Perspectives*, *30*(1), 117–137.

Coyle, Diane, 2014. *GDP: A brief but affectionate history*. New Jersey: Princeton University Press.

Dasgupta, Sir Partha, 2015. Wealth, Well-Being, and the Sustainable Development Goals, *The Blue Dot*, 1 (1).

Deaton, Angus, 2008. Income, Health, and Well-Being around the world. *Journal of Economic Perspectives*, 22 (2).

Easterlin, Richard A. and Laura Angelscu, 2009. *Happiness, Growth, and the Life Cycle.* New York: Oxford University Press.

Easterlin, Richard A., 1974. Does Economic Growth Improve the Human Lot? Some Empirical Evidence. *Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz,* Academic Press, New York and London, 89-125.

Easterlin, Richard A., 2001. Income and Happiness: Towards a Unified Theory, *The Economic Journal*, 111 (473), pp.465-484.

Easterlin, Richard A.. 1995. Will Raising the Incomes of All Increase the Happiness of All? *Journal of Economic Behaviour and Organization,* 27 (1), pp. 35-47.

Easterlin, Richard A.. 2008. *Policy Implications of the Sarkozy Report*, California: USC press.

Easterlin, Richard A.. 2010. "Well-being, Front and Center: A Note on the Sarkozy Report".*Population and Development Review* 36 (1), pp. 119–24.

Easterlin, Richard A.. 2010. Well-being, Front and Center: A Note on the Sarkozy Report. *Population and Development Review*, 36 (1), pp. 119-124.

Elias, Victor J., 1992. *Sources of Growth*. San Francisco: International Center for Economic Growth.

European Commission, 2009. *Communication from the Commission to the Council and the European Parliament: GDP and Beyond: Measuring progress in a changing world* [pdf] Available at: http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0433:FIN:EN:PDF

Fox, Justin, 2012. *The Economics of Well-Being*. Cambridge: Harvard University Press.

Freedom House, 2016. Freedom in the World Report 2016. https://freedomhouse.org/sites/default/files/FH_FITW_Report_2016.pdf

Frey, Bruno S, and Stutzer, Alois, 2002. *The Economics of Happiness*. New Jersey: Princeton University Press.

Frey, Bruno S, and Stutzer, Alois. 2012 Recent Developments in the Economics of Happiness. *Institute for the Study of Labour.*

Frey, Bruno S., and Alois Stutzer, 2002 What Can Economists Learn from Happiness Research? *Journal of Economic Literature,* 40 (2) pp. 402–435.

Fuchs, Victor, 1983. *How We Live*. Cambridge, MA: Harvard University Press

Gallup World Poll, 2013. *Household Income*, Available at: http://www.gallup.com/poll/166211/worldwide-median-household-income-000.aspx

Gordon, R.J., 2014. *A New Method of Estimating Potential Real GDP Growth: Implications for the Labor Market and the Debt/GDP Ratio* (No. w20423). National Bureau of Economic Research.

Hamburg, M.. (1987). In Memoriam: Simon Kuznets, 1901-1985. *The American Statistician*, *41*(2), 93–94.

Helliwell, John F., Richard Layard, and Jeffrey Sachs, eds. 2015. *World Happiness Report 2015*.

Jones, Charles, 2002. *Introduction to Economic Growth*. New York: Norton.

Jones, Charles, 2015. Pareto and Piketty: The Macroeconomics of Top Income and Wealth Inequality. *The Journal of Economic Perspectives*, *29*(1), 29–46.

Kahneman, Daniel, 2014. *Thinking Fast and Slow*. New York: Farrar, Straus and Giroux.

Kahneman, Daniel, Alan B. Krueger, David Schkade, Arthur A. Stone, 2006. Would You Be Happier If You Were Richer? A focusing illusion, *Science*, 312 (5782) pp. 1908-1910.

Kahneman, Daniel, Alan B. Krueger, David Schkade, Norbert Schwarz, and Arthur Stone. 2004. Toward National Well-being Accounts. *The American Economic Review* 94 (2). 429–34.

Landes, David S., 1990. Why are we so rich and they so poor?, *American Economic Review*, 80 (2), pp. 1-13.

Layard, Richard, 2005. Happiness: lessons from a new science, London: Penguin Press.

McCloskey, Donald N. 1983. The Rhetoric of economics, *Journal of Economic Literature* 21 (2), pp. 481-517

Meyer, B. D., Mok, W. K. C., & Sullivan, J. X.. 2015. Household Surveys in Crisis. *The Journal of Economic Perspectives*, *29*(4), 199–226.

Narotzky, Susana, and Niko Besnier. 2014. Crisis, Value, and Hope: Rethinking the Economy: An Introduction to Supplement 9. *Current Anthropology* 55 (S9).

New York: Sustainable Development Solutions Network.
OECD, 2013. Press Release 28/05/2013, available at:
http://www.oecd.org/newsroom/statisticsexpertstocontinueworkofstiglitz-sen-fitoussicommissiononmeasuringprogress.htm

OECD, 2016. Glossary of terms, available at:
https://stats.oecd.org/glossary/detail.asp?ID=1760

Persson, Torsten & Tabellini, Guido Enrico, 2000. *Political Economics: Explaining Economic Policy*. Cambridge: MIT Press.

Petty, William, 1691. *Political Arithmetick.* London: Clavel.

Phillipsen, Dirk, 2015. *The Little Big Number: How GDP came to rule our lives*. New Jersey: Princeton University Press.

Piketty, Thomas, 2014. *Capital in the Twenty-First Century.* Cambridge: Harvard University Press.

Rauch, J.N. and Chi, Y.F., 2010. The Plight of Green GDP in China.*Consilience: The*

Journal of Sustainable Development, (3), pp.102-116.

Screpanti, Ernesto & Zamagni, Stefano, 2005. *Outline of the History of Economic Thought.* Oxford: Oxford University Press.

Sen, Amartya, 1979. Equality of What? *The Tanner Lecture of Human Values*. Delivered at Stanford University, May 22, 1979

Smith, Adam, 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations.* London: Strahan and Cadell.

Stiglitz, Joseph, Sen, Amartya, & Fitoussi, JP., 2010. *Mismeasuring Our Lives: Why GDP Doesn't Add Up.* New York: The New Press.

Stiglitz, Joseph. "Some lessons from the East Asian miracle," *World Bank Research Observer*, vol. 11, no. 2, 1996

Stiglitz, Jospeh, Sen, Amartya, & Fitoussi, JP,. 2008. *Report by the Commission on the Measurement of Economic Performance and Social Progress* [pdf] Available at: http://www.insee.fr/fr/publications-et-services/dossiers_web/stiglitz/doc-commission/RAPPORT_anglais.pdf

The Economist, 2016. *Rewriting GDP History*, May 2, 2016. http://www.economist.com/blogs/graphicdetail/2016/05/daily-chart

The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2015, The Official Website of the Nobel Prize. Press Release, 7 May 2016.

Transparency International, 2015. Corruption Perceptions Index 2015 Results Available from: http://www.transparency.org/policy_research/surveys_indices/cpi/2015/results

UK Government National Statistics, 2015. *Emissions of Air Pollutants*. Available at: https://www.gov.uk/government/statistics/emissions-of-air-pollutants

United Nations Development Programme, 2015. *Human Development Index.* Available at: www.hdr.undp.org/en/content/human-development-index-hdi

United Nations, 2016. Sustainable Development Agenda. Available at: http://www.un.org/sustainabledevelopment/development-agenda/

World Bank, 2015. Environmental Accounting. Available at: http://data.worldbank.org/data-catalog/environmental-accounting

World Happiness Report, 2015. *World Happiness Report 2015 Final Report* [pdf] Available at: http://worldhappiness.report/wp-content/uploads/sites/2/2015/04/WHR-

2015-summary_final.pdf

Data Sets

OECD (2015), Gross domestic product (GDP). https://data.oecd.org/gdp/gross-domestic-product-gdp.htm

OECD (2015), Non market. http://stats.oecd.org/Index.aspx?DataSetCode=BLI

World Bank (2016), Meta Data, http://databank.worldbank.org/data/reports.aspx?source=2&type=metadata&series=NY.ADJ.SVNG.GN.ZS#

Statistical Annexes

GDP adjusted by Gini coeficient

	GDP/Cap (y)	Gini (G)	[GDP/Cap]*[1-Gini]	GDP rank	Gini Rank	Combined Rank
LUX	$90,693.65	0.302	$63,304.17	1	16	1
NOR	$65,394.27	0.253	$48,849.52	2	4	2
CHE	$57,205.37	0.285	$40,901.84	3	12	3
NLD	$46,457.07	0.281	$33,402.63	5	11	4
DNK	$44,250.86	0.249	$33,232.40	9	1	5
AUT	$45,878.26	0.276	$33,215.86	7	10	6
SWE	$44,433.61	0.274	$32,258.80	8	9	7
IRL	$46,030.19	0.304	$32,037.01	6	17	8
USA	$51,368.22	0.39	$31,334.61	4	28	9
DEU	$43,599.99	0.289	$30,999.59	10	14	10
BEL	$42,209.26	0.268	$30,897.18	12	8	11
ISL	$40,277.88	0.257	$29,926.46	14	6	12
FIN	$40,437.39	0.26	$29,923.67	13	7	13
AUS	$43,081.02	0.326	$29,036.61	11	20	14
FRA	$37,499.31	0.306	$26,024.52	16	18	15
GBR	$37,566.56	0.351	$24,380.70	15	26	16
ITA	$35,424.20	0.327	$23,840.49	17	21	17
KOR	$32,222.88	0.307	$22,330.46	20	19	18
NZL	$32,531.18	0.333	$21,698.30	18	22	19
ESP	$32,240.20	0.335	$21,439.73	19	23	20
CZE	$28,732.00	0.256	$21,376.61	22	5	21
SVN	$28,487.11	0.25	$21,365.33	23	3	22
ISR	$32,006.96	0.371	$20,132.38	21	27	23
SVK	$26,097.73	0.25	$19,573.30	25	2	24
PRT	$27,125.28	0.338	$17,956.94	24	24	25
GRC	$25,980.03	0.34	$17,146.82	26	25	26
POL	$23,310.22	0.298	$16,363.77	27	15	27
HUN	$22,701.45	0.289	$16,140.73	28	13	28
TUR	$18,437.11	0.402	$11,025.39	29	29	29
MEX	$16,958.57	0.457	$9,208.50	30	30	30

Source: OECD, 2015

Gini Adjusted GDP vs Gini adjusted ICW

State	ICW	GINI	Gini Adjusted ICW	Gini Adjusted GDP	ICW - GDP
Australia	$33,750.77	0.326	$22,748.02	$29,036.61	$-6,288.59
Austria	$34,187.27	0.276	$24,751.58	$33,215.86	$-8,464.28
Belgium	$43,848.10	0.268	$32,096.81	$30,897.18	$1,199.63
Czech Rep.	$14,237.77	0.256	$10,592.90	$21,376.61	$-10,783.71
Denmark	$31,413.07	0.249	$23,591.21	$33,232.40	$-9,641.18
Finland	$22,653.23	0.26	$16,763.39	$29,923.67	$-13,160.28
France	$32,502.90	0.306	$22,557.01	$26,024.52	$-3,467.51
Germany	$34,478.80	0.289	$24,514.43	$30,999.59	$-6,485.17
Greece	$15,188.40	0.34	$10,024.34	$17,146.82	$-7,122.48
Hungary	$11,491.97	0.289	$8,170.79	$16,140.73	$-7,969.94
Iceland	$32,421.13	0.257	$24,088.90	$29,926.46	$-5,837.56
Korea	$20,128.03	0.307	$13,948.73	$22,330.46	$-8,381.73
Mexico	$9,331.60	0.457	$5,067.06	$9,208.50	$-4,141.44
Netherlands	$41,607.50	0.281	$29,915.79	$33,402.63	$-3,486.84
New Zealand	$23,368.03	0.333	$15,586.48	$21,698.30	$-6,111.82
Norway	$24,911.57	0.253	$18,608.94	$48,849.52	$-30,240.58
Poland	$11,841.27	0.298	$8,312.57	$16,363.77	$-8,051.21
Portugal	$21,063.00	0.338	$13,943.71	$17,956.94	$-4,013.23
Slovak Rep.	$11,367.97	0.25	$8,525.98	$19,573.30	$-11,047.32
Slovenia	$15,933.57	0.25	$11,950.18	$21,365.33	$-9,415.16
Sweden	$37,161.63	0.274	$26,979.35	$32,258.80	$-5,279.46
Switzerland	$58,529.80	0.285	$41,848.81	$40,901.84	$946.97
U.K.	$37,884.83	0.351	$24,587.26	$24,380.70	$206.56
U.S.A.	$72,665.20	0.39	$44,325.77	$31,334.61	$12,991.16
				Average:	$-6,418.55
				Correlation:	0.714724501

Source: OECD, 2015

Income, Consumption, and Wealth

I =*household net adjusted disposable income*

C= *household final consumption*

W= *household financial wealth*

State	Income	Consumption	Wealth	ICW	rank	GDP/Cap	rank
United States	$41,355.00	$30,872	$145,769.00	$72,665.20	1	$52,591.90	3
Switzerland	$33,491.00	$33,275	$108,823.00	$58,529.80	2	$59,351.40	2
Belgium	$28,307.00	$19,361	$83,876.00	$43,848.10	3	$43,361.60	11
Netherlands	$27,888.00	$18,974	$77,961.00	$41,607.50	4	$47,967.20	4
Canada	$29,365.00	$22,514	$67,913.00	$39,930.60	5	$44,281.30	10
UK	$27,029.00	$25,848	$60,778.00	$37,884.83	6	$39,124.80	15
Sweden	$29,185.00	$21,972	$60,328.00	$37,161.63	7	$45,067.30	8
Germany	$31,252.00	$21,790	$50,394.00	$34,478.80	8	$44,999.40	9
Austria	$31,173.00	$21,502	$49,887.00	$34,187.27	9	$47,428.30	5
Australia	$31,588.00	$22,007	$47,657.00	$33,750.77	10	$46,826.30	6
France	$28,799.00	$19,969	$48,741.00	$32,502.90	11	$39,236.10	14
Iceland	$23,965.00	$30,253	$43,045.00	$32,421.13	12	$42,715.10	12
Denmark	$26,491.00	$23,260	$44,488.00	$31,413.07	13	$45,696.80	7
Norway	$33,492.00	$32,446	$8,797.00	$24,911.57	14	$66,812.20	1
New Zealand	$23,815.00	$17,999	$28,290.00	$23,368.03	15	$36,410.40	16
Finland	$27,927.00	$21,272	$18,761.00	$22,653.23	16	$40,951.30	13
Portugal	$20,086.00	$11,858	$31,245.00	$21,063.00	17	$27,929.90	20
Korea	$19,510.00	$11,783	$29,091.00	$20,128.03	18	$32,663.80	17
Slovenia	$19,326.00	$10,010	$18,465.00	$15,933.57	19	$29,103.30	19
Greece	$18,575.00	$12,411	$14,579.00	$15,188.40	20	$$2,6753.10	22
Czech Republic	$18,404.00	$7,010	$17,299.00	$14,237.77	21	$30,053.70	18
Chile	$14,533.00	$6,712	$17,733.00	$12,992.57	22	$21,334.90	26
Poland	$17,852.00	$6,753	$10,919.00	$11,841.27	23	$24,200.00	23
Hungary	$15,442.00	$5,757	$13,277.00	$11,491.97	24	$24,037.20	24
Slovak Rep.	$17,503.00	$7,938	$8,663.00	$11,367.97	25	$27,416.20	21
Mexico	$13,085.00	$5,854	$9,056.00	$9,331.60	26	$16,946.90	27
Russia	$19,292.00	$4,516	$3,412.00	$9,073.30	27	$22,629.10	25

Source: OECD, 20150